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of the

FIELD NATURALISTS CLUB OF VICTORIA

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Hon. Editors : Ina M. Watson
N. A. Wakefield

The Author of each Article is responsible for
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1953

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The Victorian Naturalist

Vol. 69 — No. 1 MAY 9, 1952 No. 821

PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, April 7, 1952. About 180 members and friends attended.

Apologies were received from the President, Mr. E. E. Lord, and also from the two Vice-Presidents. It was proposed by Miss Adams, seconded by Mrs. Cooper, that Miss Watson preside at the meeting.

All visitors were welcomed to the meeting, especially Mr. Roy Deans from England, and Mrs. Hartshorn, wife of Professor Hartshorn, from U.S.A.

A new member was welcomed to the Club—Miss N. F. Wagner.

The subject for the evening was given by Mr. Henderson—"With Car and Camera Round Australia". We went with him up to Brisbane, through Queensland to Cairns, and round through Darwin, Alice Springs and Adelaide, back home again. The talk was illustrated with beautiful colour pictures and happily described in a droll way by Mr. Henderson, who kept the audience in a simmer of laughter.

A vote of thanks was passed by Mr. Bryan, seconded by Miss Fletcher, and carried with acclamation.

The Secretary announced that an Extraordinary General Meeting will take place on Monday, May 12, 1952, at 7.45 p.m., to deal with an application for affiliation by the Maryborough Field Naturalists Club.

The Club has been asked to send two delegates to the Congress of A.N.Z.A.A.S., which meets in Sydney on August 20 to 27. Dr. Chattaway has agreed to act as one delegate, and members were asked to submit the name of any other member who would also act in this capacity for the Club.

Nominations for office-bearers and Committee members for the ensuing year were requested to be forwarded to Council immediately.

The Chairman, Miss Watson, advised members that Council had been very concerned regarding the finances of the Club. Unfortunately advertisements for the ensuing year in the *Naturalist* would be fewer than in previous years. Every possible avenue for economy in printing the *Naturalist* had been investigated, but it appeared there was no other way of meeting expenditure in the future than by raising subscriptions. Under the powers given it by the Constitution, the Council had decided that subscriptions for the next year will be raised to:

Ordinary Members	£2 0 0
Joint Ordinary Members	2 10 0
Country Members	1 10 0
Joint Country Members	1 17 6
Junior Members	No alteration

The Secretary advised that one nomination for the Australian Natural History Medallion had been received—that of Mr. J. H. Willis, proposed by Mr. H. C. E. Stewart, seconded by Mr. Chalk.

EXHIBITS

FLOWERS—*Thryptomene saxicola, Astroloma conostephioides, Lambertia formosa*—Mr. J. S. Seaton; *Cyclophorus rupestris*, Mt. Drummer—Mr. Hooke. Exampels of fasciation in *Convolvulus erubescens, Correa reflexa*, garden grown—Mr. J. Ros Garnet.

SHELLS—Brachiopod, *Magellania flavescens* Lam. from Western Port—Mr. Gabriel.

ARTEFACTS—Miss Elder.

MISCELLANEOUS—Photo of Marlo Back Beach, Miss Wigan. A picture made from scraps and chippings of opal from Coober Pedy opal fields, Miss Edith Raff.

NOTICES

EXTRAORDINARY MEETING

Under provisions of clause 24 of the By-laws an Extraordinary Meeting will be held at the National Herbarium on May 12, 1952, at 7.45 p.m., to consider an application for affiliation by the Maryborough Field Naturalists Club.

ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the F.N.C.V. will be held at the National Herbarium on **TUESDAY, June 10, 1952,** at 7.45 p.m.

LIBRARY

The Librarian requests that all books be returned by May 31 for stock-taking.

LOWER GLENELG STATE FOREST

Word has recently been received that all the area on the southern bank of the Glenelg River has been declared a sanctuary.

The area on the north bank is still open (mainly because of complaints from soldier settlers of the need to clear out kangaroos, which are damaging their crops) but it is hoped that in the not far distant future this, too, will be declared a sanctuary.

RECOMMENDATIONS FOR LEGISLATION FOR VICTORIAN NATIONAL PARKS

(Report No. 5 of the National Parks and National Monuments Standing Committee)

On April 11, 1950, the Parliamentary State Development Committee tabled its Report on the Alpine Regions of Victoria—Ski-ing and Tourist Resorts. The enquiry, which culminated in this report, caused the committee to make certain recommendations affecting the State's nature conservation areas as well as its popular tourist resorts, notably the creation of a portfolio of Minister of Tourist Development under whose control would be placed all National Parks, alpine regions and other tourist resorts. For each of these three divisions of responsibility the Minister would be assisted by an Advisory Authority (or "Committee", as a subsequent report termed it). In the case of the Alpine body, its members would be drawn from the Ski Club of Victoria, the Federation of Victorian Ski Clubs, local alpine reserves committees and public servants. It was considered that most or all of the following departments or instrumentalities should be represented: Lands, Forests Commission, Country Roads Board, State Electricity Commission, Railways, Tourist Resorts Committee, and Treasury. Further, it was considered that the Government officials and the general public should be given approximately equal representation on the "Authority".

That the Development Committee was gradually crystallizing its ideas on the shape of things to come is evident from the proposals embodied in its subsequent reports on National Parks.

An Interim Report on National Parks and Tourist Facilities issued on November 9, 1950, indicated the general lines along which the specific enquiry into Victoria's National Parks was proceeding. The sympathetic attitude of the Committee was evident from the statement that "Victorians have never given the matter of parks and monuments adequate or proper attention. This is in marked contrast to that of other countries."

The investigation occupied many months and involved extensive travels and tours of inspection by the Committee, and a number of public hearings during which a considerable volume of evidence was submitted by many organizations and individuals. (See *Vic. Nat.*, June, 1951, pp. 20-26.) Its final report, issued in November, 1951, contained the findings of the Committee and gave, in some detail, the recommendations to the Government as to ways and means of controlling and developing the State's National Parks.

The following excerpts from this lengthy document should serve to inform members of the Club and other interested readers to what extent the Development Committee's opinions and recommendations approach those of our own Committee and of the

Combined Societies' Standing Committee on National Parks and National Monuments.

NEED FOR AUTHORITY. "The weight of evidence is that the control of National Parks should be vested in an Authority created specially for the purpose." "The Committee is of opinion that the development of National Parks and alpine regions is interlocked so closely with the general question of tourist policy that it would be in the interests of all three that they be controlled by a single Authority."

FINANCE. The Committee agrees that "financial starvation is one of the main handicaps under which Committees of Management labour" and, inter alia, "For the purpose of raising funds most of them find it necessary to let grazing leases within their parks. It need scarcely be emphasized that generally speaking grazing leases and conservation of fauna and flora in a natural state cannot both be successful in the one area. None of these abuses (grazing, timber extraction and quarrying for road-metal being specified as 'abuses') can be removed without some proper statutory provision for finance."

PLANNING. "The scientific development of National Parks calls for the creation of a master plan for each reservation based on the purpose for which each park was created and on the need of the people who use it." The Committee considers that an immediate survey of each National Park should be made and the master plan drawn up for the information and guidance of the projected Authority.

RECREATION. The plan should include provision for recreational facilities in selected parts of those parks where their inclusion would not detrimentally affect the basic purpose of the area in question.

SELECTION OF AREAS. The Committee believes that an urgent task of the Authority would be to make a survey of the State for sites suitable and desirable as National Parks, having in mind the needs of all regional communities. Areas listed for examination include a number submitted by various municipal councils. They include: (1) Four hundred acres embracing the summit of the Warby Ranges; (2) 516 acres of the Beechworth Reserve—an area, traversed by the Gorge Road, which was gazetted as a reserve in 1913; (3) 20 acres of forest on Mt. Moliagul; (4) approximately 2,000 acres at Bright, adjacent to the Tawonga-Bright road; (5) Lake Wallace (Edenhope); (6) Mt. Eccles Reserve (Minhamite); (7) Paradise Falls (Oxley Shire); (8) Traralgon Creek Valley; (9) a tract of land on the Harry's Creek Road, Violet Town; (10) a series of small areas on the perimeter of Bendigo; (11) Paddy's Ranges, Maryborough; and (12) Emerald Park. Appendix B of the report quotes the views of the Town and Country Planning Association on the desirability of including the Baw Baws, Grampians, Lower Glenelg River, Central Highlands, Peterborough-Cape Otway Forest, and the Barmah Forest on the Murray as areas suitable for National Parks.

Appendix D quotes, without amendment, the 68 sites long recommended as National Monuments by the Club's National Parks and National Monuments Committee. Perhaps the most imaginative proposal made by the Development Committee concerns the establishment of an alpine national park extending over the whole of the North Gippsland and north-eastern Alps to the New South Wales border. It was even suggested that the New South Wales Government might be approached to extend its Kosciusko State Park southwards to link up with the Victorian Alpine Park—a scheme mooted some years ago and which is known to be viewed favourably by a number of people in our sister State.

PRIVATE ENTERPRISE AS AN AID TO DEVELOPMENT. The Committee believes that much of the development of our National Parks as tourist attractions could be undertaken by private enterprise under the guidance and with the advice of the Authority, after the public facilities had been provided for from public funds.

TOURISTS. While the tourist value of National Parks is viewed as an important feature of their development (Mt. Buffalo and its Chalet are quoted as an excellent illustration of this), it is pointed out that one of the primary purposes of these reserves is to preserve them in a natural state as sanctuaries—a purpose that must not be relegated to the background.

RANGERS. The view that park rangers should be trained for their job—"schooled in the elements of natural history and conservation"—is endorsed. Acknowledging that a park ranger should be more than an odd-job man, it commends the use of the Fisheries and Game Department and the Forests Commission for training purposes.

GRAZING AND FIRES. The report gives due weight to the findings of the 1946 Royal Commission on Forest Fires and Grazing and to the evidence of a number of witnesses. The Committee failed to understand the claim that "grazing leases safeguard the parks against unauthorized graziers." Rather naively it adds: "If grazing were prohibited, any stock found in a National Park could be impounded and proceedings taken against the owner." "Grazing of domestic stock is completely prohibited in many National Parks throughout the world, including those in Switzerland and Tasmania."

INDIVIDUAL NATIONAL PARKS. Several points of interest arise in the section dealing with individual reserves. The Committee recommends the extension of Wyperfeld by including an area of up to three square miles to the north towards Patchewollock, where mallee grows more freely and where the Lowan is known to breed.

In evidence it was urged that Mallacoota National Park be extended to include the Howe Ranges, and in this the Committee agrees. Extensions to both the Tarra Valley and Bulga National Parks are also recommended. After stating the various flagrant abuses to which Tower Hill has long been subject, the report says: "Action should be taken to restore this area as nearly as possible to its original condition." Buchan Caves, Werribee Gorge, Churchill Park, the two Phillip Island Koala Sanctuaries and the Sir Colin Mackenzie Sanctuary at Badger Creek are each briefly discussed and recommended for reservation in perpetuity as National Parks. Referring to the Badger Creek Sanctuary, it is stated that action is being taken to transfer the 351-acre Coranderrk reserve to the Committee of Management—a transfer that has long been advocated by naturalists. In another section of the report the Committee points out the desirability of using the Badger Creek Sanctuary as a breeding place for the native fauna required for restocking the several National Parks.

Some space is devoted to areas such as the Dandenong Ranges (concerning which are recommended several measures calculated to stop the progressive despoliation of the scenic features of these ranges) and the Central Highlands. The latter, the Committee believes, would provide an admirably situated and highly desirable National Park, embracing such important features as Mt. Franklin, the Daylesford-Hepburn mineral springs, and the several waterfalls of the Loddon River and Sailors Creek.

The foregoing are all matters which the Development Committee believes should be examined by the National Parks Authority when it is established. In the concluding section of its report the Committee deals with matters which can be solved only by legislation—pre-eminent among them being, of course, the actual creation of a National Parks Authority.

RECOMMENDATIONS FOR LEGISLATIVE ACTION. In September, 1950, a deputation to the Premier made certain requests (see *Vic. Nat.*, Feb. 1951, pp. 193-194) and the following are, in essence, the recommendations of the State Development Committee which arose out of these requests. Having satisfied itself that Victoria's National Parks and National Monuments have been too long neglected; that the present system of control by delegated committees was, in the main, unsatisfactory; that there was need of a constituted Authority to advise and co-ordinate the work of these committees; and that the present system, under the guidance of a Government department, could not be made to operate successfully, it recommended:

1. That the reservation in perpetuity and the control and management of National Parks and National Monuments in Victoria be provided for by legislation.
2. That a National Park and Tourist Authority be created under the responsibility of the Minister of Tourist Development, such Authority to consist of a full-time Director (who, in the absence of the Minister, shall be chairman), the Secretaries for Lands, Public Works and Health, the Director of Finance, the Chairman of the Forests Commission, and the Manager of the Government Tourist Bureau. (Five of those recommended are members of the present Tourists Resorts Committee.)
3. That the functions of the Authority, in respect of National Parks, shall include the framing and carrying out of policy or the co-ordination of activities, the allocation of funds, and such other functions as shall be set out in the proposed legislation.
4. That a National Park Advisory Committee be created to advise the Authority on matters relating to National Parks. This committee should include a representative of each of a number of Government departments and instrumentalities (Fisheries and Game Department, State Rivers and Water Supply Commission, State Electricity Commission, Victorian Railways Commissioners, Country Roads Board, Soil Conservation Authority and Police Department), and an equal proportion of members of the general public drawn from the Combined Societies' Standing Committee on National Parks and National Monuments and from the various organizations and interested individuals.

   (Note: The Advisory Committee could thus number at least fifteen individuals.)

   It was recommended that the Director of the Authority be ex officio Chairman of each Advisory Committee, which shall report annually to the Authority.
5. That local park committees be retained as a small panel, one fourth of its members consisting of representatives of the appropriate municipality, one fourth representing Government bodies, and one half drawn from interested citizens. Their appointment should be for five years and renewable. They should be obliged to undertake annual inspections. The functions of the local committees should be defined and should include the supervision of the area under their jurisdiction, the making of recommendations for works, and the payment of staff. Each committee should report at least annually to the Authority.

A recommendation of some interest is that absence without reasonable excuse from the annual tour of inspection should be regarded as sufficient reason for termination of a member's appointment.

6. That adequate annual appropriation be made for developmental and continuous maintenance work at parks, and that the appropriation be increased in subsequent years to enable approved plans to be carried out.

Several further recommendations were made, dealing with access and use by the public, publicity, acquisition and reversion of private property, fire protection, destruction of vermin and noxious weeds, and soil erosion; that suitable reserves be developed as camping areas for school children; and finally that all National Parks be declared sanctuaries for both flora and fauna.

Comment

On the whole the report is a satisfactory document and its recommendations are generally acceptable to those interested in the welfare of our National Parks and National Monuments. That they, in some measure, depart from the broad pattern of reform outlined by the National Parks and National Monuments Committee is explained by the necessity for covering the wider concept which links tourist facilities and tourist traffic with this type of reserve. The inclusion of public servants at all levels of National Park administration has something to commend it. It should give some assurance that decisions will be made and recommendations put into effect with due reference to the rights and requirements of the various sections of the community who may be affected in one way or another by National Park policy. It also offers some prospect of a co-ordination of effort being achieved.

Finance has been, and it seems always will be, a barrier to perfection of our National Park administration, but if the projected legislation makes reasonable provision the Authority will certainly not suffer the major handicap which continually frustrated the several Committees of Management, the Tourists Resorts Committee and the Lands Department in their efforts to improve the prospects of this State's reserves.

At the present juncture it is not possible to forecast the form the legislation will take. It is, however, understood that the Minister for Lands and for State Development (Sir Arthur Lind) has appointed a committee of officers of the Lands Department to draft the State Development Committee's recommendations into a legislative measure which, it is hoped, will be brought down by the Government early this year.

—J. R. Garnet,

Hon. Secretary, Nat. Parks and Nat. Monuments Committee.

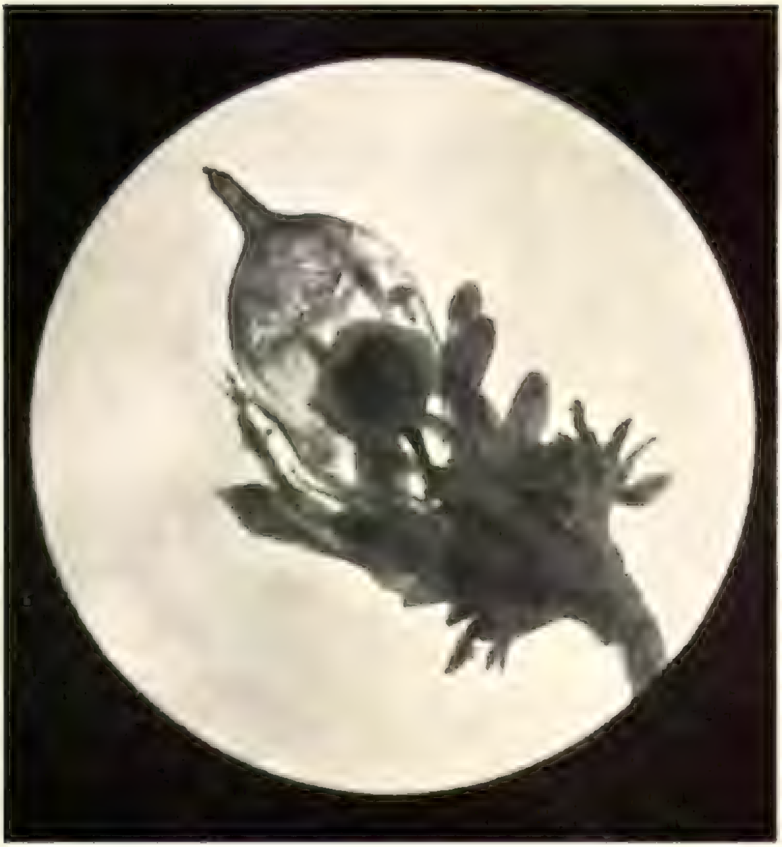
RE-DISCOVERING THE MOSS BRYOBARTRAMIA ROBBINSII

By R. D. Lee

It was a remark by Mr. J. H. Willis concerning the lack of locality records for Victorian mosses that led to the re-discovery of a very interesting species, *Bryobartramia robbinsii*, which had only been found once before.

Early in September last, with a week's holiday at Logan, it was decided to see what could be collected there. Logan, some 140 miles north-west of Melbourne and about 15 miles from St. Arnaud, was, and generally still is, one of the unknown districts as far as the moss flora is concerned.

In all, 19 different species were found—not a very impressive number, but while Mr. Willis was looking them over for identification, his attention was attracted by one solitary plant of unusual form, a tiny moss with white fructification quite unlike any other. Although he felt certain of

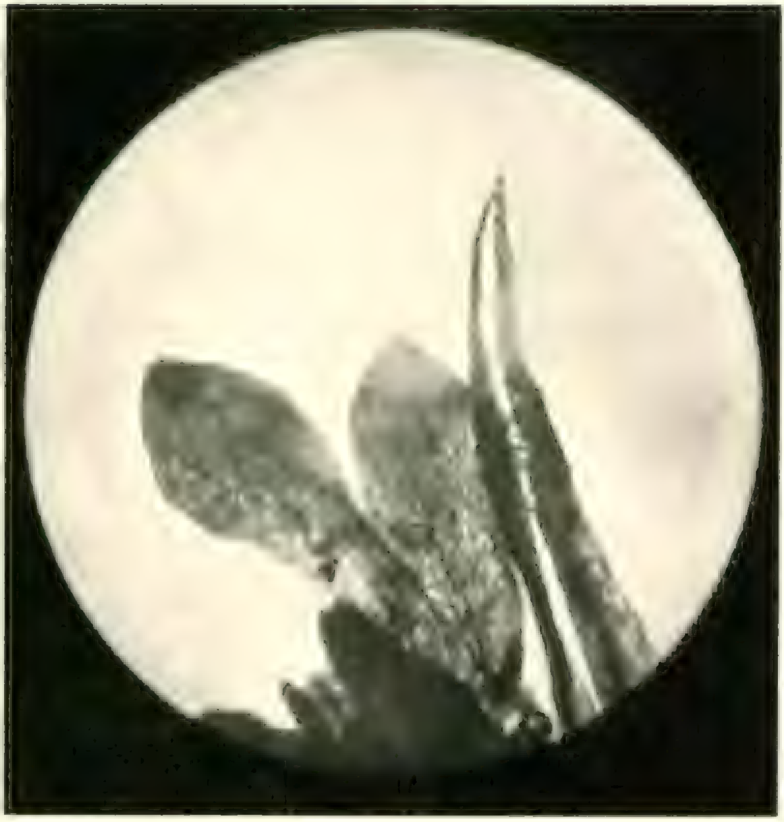


Plant of *Bryobartramia*, showing large pointed epigonium and included capsule on a deeply pigmented seta. (Note air bubble in epigonium.)

Photomicrograph by R. D. Lee.

its identity, in order to make sure beyond all doubt the specimen was sent to Mr. G. O. K. Sainsbury of Wairoa, New Zealand, who verified the decision.

The aggravating part was that, being more or less hidden among other specimens found on the ground and so small that a lens was needed to see it, we didn't know to within half a mile just where it came from. Fortunately we had the chance of visiting the locality again for a week-end in November, and a good look-out was kept for more specimens. Mr. Willis had supplied a clear description of all its parts, so we had a reasonable idea of what to look for — all we had to do was to find it. Simple! Nevertheless, hope was beginning to fade, when just before it was time to give up for the return trip, we came across a patch of tiny plants we felt sure were what we were looking for; they grew on a flat stretch of ground that would be very damp and waterlogged in winter. We were extremely lucky in finding this moss again, particularly as by November the ground in those parts had dried out and become very dusty. Such



Two kinds of leaves in *Bryobartramia*.

minute ephemerals, no more than 3 mm. long, are quite liable to be dispersed by the wind, even though growing amongst grass. It would be interesting to know whether the type of ground there is similar to that in which the original find was made.

Bryobartramia robbinsii came first from Castlemaine in 1941 by Mr. F. Robbins an eminent and well-known Victorian botanist; but up to September, 1951, it had eluded all other searchings. The fruiting parts differ so much from those of all other known mosses that not only was *Bryobartramia* unsuited for inclusion in any existing genus, but a new family (the *Bryobartramiaceae*) had to be created for it. Under a microscope, the internal structure of the capsule can plainly be seen—a round cluster of orange spores terminating a short red seta, which is very brittle, and the whole completely covered by a transparent epigonium or false calyptra. Evidently the epigonium falls away with the capsule inside it, when the spores are mature, allowing them to disperse from below. However, it would be necessary to collect specimens of this moss at other seasons of the year to observe full details of its development.

The normal leaves, almost spoon-shaped and each with a strong nerve (vanishing below), are easily distinguished from the longer, narrow, tapering perichaetial leaves which surround the capsule.

Let us hope that other discoveries of this tiny species may be found to further the general desire for knowledge concerning it. If you come across a white, pointed, belljar-like fruiting body (to do so one must discard all sense of dignity and search on hands and knees as we did), think of *Bryobartramia robbinsii*. You may have found something worthwhile.

WHAT, WHERE AND WHEN

General Excursions:

Saturday, May 10—St. Albans, four-mile walk. Subject: Mallee Flora. Leader: Mr. K. Atkins. 12.55 p.m. St. Albans train, Flinders Street.

Saturday, May 24—You Yangs. Bus excursion. Subjects: Birds and Eucalypts. Leader: Mr. E. Hanks. Bus leaves Batman Avenue, 8.30 a.m. Bring one meal and a snack. Bookings, 8/-, with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Saturday, May 31—Emerald. Leaders: Botany Group. 9.18 a.m. Ferntree Gully train, Flinders Street. Bus to Emerald. Bring one meal.

Preliminary Notice:

Two Museum lectures have been arranged:

Saturday, June 14—Anthropology. Lecturer: Mr. D. J. Tugby, Ethnologist. Subjects: Ceremonial and burial trees, widows' caps, cylindro-conical stones and stone implements of the central and western New South Wales aborigines. Members meet 2.30 p.m., Russell Street entrance.

Saturday, July 26—Entomology. Lecturer: Mr. A. N. Burns, Entomologist. Subject: Alpine Insects. Members meet 2.30 p.m., Russell Street entrance.

Special Notice:

The Mt. Buffalo National Park Committee has granted to the Club hire of the Horn Hut from Friday, December 26, 1952, to Saturday, January 3, 1953. Full details will be published when finalized.

Group Fixtures:

Monday, May 26—Botany Discussion Group. Royal Society's Hall, 8 p.m.
Tuesday, June 2—Geology Discussion Group. Royal Society's Hall, 8 p.m.

NOTE—*Until further notice, children under 15 half fare.*

—Kenneth Atkins,
Excursion Secretary.

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The Victorian Naturalist

Vol. 69 — No. 2 JUNE 9, 1952 No. 822

EXTRAORDINARY MEETING

Under the provision of clause 24 of the By-laws an Extraordinary Meeting was held before the General Meeting at the National Herbarium on May 12, 1952, to consider an application for affiliation by the Maryborough Field Naturalists Club.

Dr. M. Chattaway, Vice-President, took the Chair. The Secretary reported that the Annual Report, Statement of Finance, Annual Subscription List and List of Offices of the Maryborough F.N.C. had been examined and found in order.

The following motion was moved by Mr. F. Lewis, seconded by Miss Adams, and carried by members:

> "That the Maryborough Field Naturalists Club be affiliated with the Field Naturalists Club of Victoria Inc."

This meeting then closed.

PROCEEDINGS

The monthly meeting of the Club followed; about 120 members and friends attended.

The following were elected and welcomed as Ordinary Members: Mrs. C. McQueen, Misses E. V. Reed, Isabella D. and Marion J. Phillips, Messrs. R. W. Nicholas and Edward Baxter, and as a Junior Member, Master R. J. McQueen. A nomination for membership was received on behalf of Mr. Eric John Rush, of 34 Hornby St., Beaumaris, S.10 (Mr. F. Lewis—Mr. Tarlton Rayment).

The speaker for the evening was Mr. Richard C. Seegar, a member of the Club who has recently spent four and a half months along the coast of Arnhem Land. Mr. Seegar illustrated his talk with beautiful slides, and it was gratifying to learn of the excellent care being taken of the half caste children of Northern Australia.

Dr Chattaway read a letter received from Mr. J. H. Willis stating he did not wish to accept nomination for the Natural History Medallion. Members were requested to forward further nominations to the Secretary before May 27, 1952.

Dr. Chattaway advised that until further notice children under 15 years of age will be charged half fare on excursions held by the Club.

Owing to Mr. Lord's recent illness, Dr. Chattaway said that Council did not propose to ask for a presidential address for the Annual General Meeting on June 10, 1952. After the business meeting has been held, members will be invited to join in a conversazione, discussion of exhibits and nature notes.

Members were asked to bring as many specimens as possible and see that an explanatory note was displayed with them.

The Chairman announced that a cheque for £25, being a bequest from the Estate of the late J. W. deL. Forth, had been received, and that it was being used to help purchase a good screen for showing colour pictures.

Mr. Lee asked members who have purchased copies of *A Census of Victorian Plants* not containing maps to apply for same as soon as convenient.

The Chairman said that a request for specimens of reptiles (alive or dead) has been received from Jno. McLoughlin, of Cairns, who is willing to exchange.

Mr. Gabriel spoke briefly of his exhibit "Roadnight's Volute" which was described by Professor McCoy in 1881. These shells, among the most beautiful and rarest in Australia, were first obtained by Baron von Mueller.

Mr. Seegar exhibited a pipe used by native men, and one fashioned from the short thick claw of a lobster used by the women, beautiful mats woven from pampas and coloured with dye obtained from mangroves, and brooches made from shells and cleverly tinted by the girls at the Mission Stations.

Miss Barbara Neilsen said the interest in specimens of *Claudiconcha cumingi* lies in their habitat. The species itself is not particularly uncommon, being recorded from South Australia and Victoria, and is usually found in the crevices of rocks and hollow stones. However, the specimens exhibited were found living in masses of the worm shell *Galeolaria caespitosa* (Lamarck). This is the only record of a pelecypod living in association with the *Galeolaria* in Victoria.

Mr. A. B. Scott said his exhibit of Lignite Brown Coal from Maddingley No. 2 mine, Bacchus Marsh, was found 80 feet below surface in the Parwan valley. Specimen shows natural marcasite running through lignatised fossil wood. Marcasite is white pyrites, disulphide of iron; it is used in the gem trade as a brilliant. The meeting concluded at 9.35 p.m.

EXHIBITS

BOTANY.—Tiny Greenhood orchid (*Pterostylis parviflora*).—Mr. Haase. *Banksia collina*—Mr. D. Lewis. Crucifix orchid (Queensland)—Mrs O'Mara. *Grevillea banksii* (var: Forsteri).—Mr. Savage. Moss taken from Metcalf (Kyneton).—Mr. Miller. Tree-tomato (*Cyphomandra betacea*), foliage and fruit, Tropical America.—Miss Edith Raff. Plants from the Basalt Plains.—Mr. K. Atkins. Illustrations of photos of Mr. Nicholls' "Orchids of Australia".—Mr. Wakefield.

SHELLS.—*Pterospira roadnightae* McCoy "Roadnight's Volute". Bass Strait and South Australia.—C. J. Gabriel.

FUNGI.—Fly Agaric (*Amanita muscaria*) from Macedon.—Miss I. Watson.

Geology. Granite from Granite Island (S.A.).—Mrs O'Mara. Specimens of volcanic bombs from Mt. Porndon. Scotch Agates.—Mr. Miller. Lignite from Bacchus Marsh.—Mr. A. B. Scott.

SYSTEMATIC NOTES ON VICTORIAN MOSSES — I.

SPHAGNACEÆ

By J. H. WILLIS, National Herbarium of Victoria

Certain groups of *Musci* in Victoria have been very unsatisfactorily investigated, and this paper is the first in a series of revisional studies aimed at bringing some order into the taxonomic tangle and chaotic state of nomenclature at present affecting Australian bryological literature. All pronouncements upon identity and distribution are either the result of the writer's personal research or that of sound critical experts abroad with whom he has communicated, due acknowledgements being made in the text.

Pallid spongy bog-mosses belong to the primitive order *Sphagnales*, consisting of a single family and single genus *Sphagnum* which is represented throughout the world in cool moist climates. They are the turf- and peat-formers of Ireland and other vast tracts in the northern hemisphere. Though nowhere so conspicuous as in boreal regions, *Sphagnum* species are to be found in scattered localities through southern and western Victoria, crossing the Dividing Range into alpine country of the north-east. Only in the higher alps do they cover shallow morasses of any size, lowland occurrences being usually quite small and isolated.

Plants with sporocarps are extremely rare here, and I am aware of only two undoubted Victorian collections that show any capsules, viz. *S. leionotum* from Mt. Buffalo (F. Mueller, March 1853) and *S. subsecundum* from Waratah Bay (Dr. Isabel Cookson, ca. 1930); a good fruiting specimen of *S. leionotum* in Melbourne Herbarium from "sources of the Hume River, 4000 ft." (*leg.* F. Mueller, Jan. 1874) may have come from the Victorian side of the Murray.

Eight specific epithets have been applied to Victorian species, but only two of these are still of legitimate application, and the total number of species probably does not exceed five. So muddled were the literary references to our sphagna, and unreliable the names appearing on packets of specimens in the Melbourne Herbarium, that it was virtually impossible to name collections with any degree of certainty.

Fortunately for Victoria, C. Warnstorf, who had been responsible for most of the confusion attaching to nomenclature of Australian *Sphagnaceæ*, was not able to examine much material from this State—his splitting up of species in the *Subsecunda* group has been wittily described by Dr. A. Le Roy Andrews as "one of the seven wonders of the world"! With a view to resolving these doubts concerning local species of *Sphagnum*, I recently forwarded to Dr. Andrews (Ithaca, New York) 17 collections from representative stations throughout the range of the genus in Victoria, including every noticeable variation in growth form. Dr. Andrews very kindly examined and identified this material, and his report (quoted later) is an invaluable contribution to our knowledge of the Victorian moss flora.

THE TREATMENT OF VICTORIAN *SPHAGNACEÆ* IN LITERATURE—A BRIEF SURVEY

Literary references to bog-mosses in Victoria are astonishingly meagre (as with most other groups of the State's *Musci*). Baron von Mueller was the first to collect any *Sphagnum* in the colony. His fruiting specimens of *S. leionotum* C.M. (in Melbourne Herbarium) are accompanied by the following handwritten label:

> *"in vallibus altioribus umbrosissimis rupestribus nec non profundioribus inundatis graminosis tractus Buffalo Range.* 5/3/1853."

The determination "*S. cymbifolioides* C.M." is made in the handwriting of E. Hampe, who recorded this first species for Victoria during the same year (*Linnæa 26* : 489, 1853). Doubtless this collection was also the basis of the only *Sphagnum* recorded in Mueller's *Second General Report* to Parliament (Oct. 1854, p. 17), but the name appears as "*S. cymbophyllum*" F. Muell.—a *nomen nudum*, therefore invalid.

W. Mitten in "Australian Mosses" (*Proc. Royal Soc. Vict. 19* : 4-96, 1883) lists only two species for Victoria, viz. *S. cymbophyllum* F. Muell. from "Australian Alps" (F. Mueller) and *S. cymbifolium* Ehrh. from "Gippsland" (also collected by Mueller).

Twenty years later W. W. Watts and T. Whitelegge in "Census Muscorum Australiensium" (*Proc. Linn. Soc. N.S.W.*, 1902 Supplement) list six Victorian species of *Sphagnum* as follows:

S. antarcticum Mitt.—(Miss Campbell, without locality).
S. cymbifolium Ehrh.—Gippsland (F. Mueller); Australian Alps (J. Stirling).
S. cymbophyllum F. Muell., *nomen nudum*—Gippsland, Mt Aberdeen (i.e. The Horn, Mt. Buffalo) and Victorian Ranges (all collected by Mueller).
S. laticoma, C.M., *nom. herb.*—Blacks' Spur (Miss Campbell).
S. subsecundum Nees.
  var. *macrophyllum* C.M.—Blacks' Spur (Miss Campbell).
S. sullivani C.M., ? *nomen nudum*—Mt. William Creek (D. Sullivan, 1875).

In 1912 Rev. W. W. Watts wrote again on "The Sphagna of Australia and Tasmania" (*Proc. Linn. Soc. N.S.W.* 37 : pp. 383-389) and his Victorian list now differs greatly from the one of ten years previously—as a result of "Dr. C. Warnstorf's exhaustive monograph (1911) which has, for the first time, made it possible to issue a satisfactory summary of the Sphagna of Australia and Tasmania . . . . . —a striking tribute to the author's unremitting industry and patience in research." One doesn't question Warnstorf's industry, but cannot resist the thought that it could have been turned to better account in some other direction.

Five *Sphagnum* species appear for Victoria on this 1912 Census. *S. laticoma* and *S. sullivanii* are repeated from 1902, *S. cymbifolioides* C.M. replaces the former name *S. cymbophyllum* and *S. subbicolor* Hpe. is apparently meant to replace *S. cymbifolium* (although Watts does not say so); *S. antarcticum* and *S. subsecundum* are now dropped without a word of explanation—albeit these two species really *do* occur here—while a new record is introduced, *viz.* *S. comosum* C.M., *nom. herb.*, from Berwick (*leg.* Robinson). This later treatment did nothing to elucidate the position and only added to the prevailing confusion. Small wonder that Australian botanists since then have not attempted to give names to the sphagna they have found.

From my recent communications with Dr. A. Le Roy Andrews, it is obvious that we have *only two* species of *Sphagnum* which are at all common in Victoria. These he would call *S. leionotum*, the southern analogue of *S. palustre* L. (syn. *S. cymbifolium* Ehrh.), and *S. subsecundum*. S. LEIONOTUM C.M. is frequent in alpine bogs (as on the Baw Baws, Mt. Buffalo, Mt. Speculation, Mt. Hotham, the Bogong and Dargo High Plains and sources of the Murray), but descends to lower altitudes along the Delegete River near Bendock, at Gilderoy, Beenak, the Blacks' Spur, Otways, and Victoria Ranges in the Grampians. S. SUBSECUNDUM Nees (syn. *S. novo-zelandicum* Mitt.) is more widespread and variable, occurring along the swampy margins of lowland streams and in small hillside soaks—often restricted to a few square feet. I have examined specimens from the following (west to east) localities in Victoria: Gallows Creek in Lower Glenelg National Forest, Gorae West, Mt. Clay N.E. of Portland, Mt. William Creek, Yeodene on the Upper Barwon, Warrandyte, near the Dandenongs, Healesville, Blacks' Spur, 15 miles E. of Broadford, Cathedral Range, Upper Latrobe River, Arthur's Seat (on Main Ck.), Foster, Waratah Bay, Muddy Creek and Nowa Nowa. It ascends to 3000 ft. on Mt. Buangor near Beaufort, and reaches into the alps at Lake Mountain and on the Baw Baws where it mingles with the more typically alpine *S. leionotum*.

Two other species, *S. antarcticum* Mitt. and *S. falcatulum* Besch., are strikingly different and much more localized. Each of these is known only from two definite Victorian localities, viz. along the Upper Latrobe River at Nayook West (both collected by the writer in December, 1929), while the former grows also along the Upper Barwon River, near Forrest in the Otways (H. N. Marriner, Nov. 1951), and the latter on the S.E. slope of Mt. Clay near Portland (Cliff. Beauglehole, Feb. 1950). It is only to be expected that further collecting will extend the range of both species. These four sphagna are also the principal ones to be found in New Zealand, where *S. falcatulum* has a long involved synonymy—some eight "species" of the Cuspidata group.

Dr. Andrews identifies with the Bornean *S. beccarii* Hpe. some specimens which I obtained at a source of the Yarra near Mt. Horsfall, but further information is needed to define its constant difference from the very similar and locally abundant *S. leionotum*; *S. beccarii* would seem to be distinguishable by its less porose leaves and less fibrillose cortical branch cells. It is a remarkable fact that all four of the Victorian species may be collected at the Latrobe–Little Yarra Divide near Powelltown—surely the richest centre of *Sphagnum* development in the State.

ARTIFICIAL KEY BASED ON EXTERNAL FEATURES

1. Lateral branches long-tapering, almost flagelliform; leaves narrow-lanceolate to linear, finely acuminate, flattened and conspicuously undulate .. .. *S. falcatulum*
   Lateral branches not long-tapering, often short; leaves round to broad-lanceolate, very concave, not or hardly undulate 2

2. Branches appearing squarrose from the short, stiff, regularly spreading leaves which contract suddenly above (by inrolling margins) to form an almost indurated apex .. .. *S. antarcticum*
   Branches not squarrose; leaves mostly appressed and closely imbricate, with non-indurated apices 3

3. Massive plants, becoming wholly white when dry; leaves very obtuse, not or only obscurely toothed at the tips .. *S. leionotum* (also *S. beccarii*)
   Rather slender plants, often of a green or pale yellowish cast when dry; leaves acute, conspicuously toothed at the extreme tips .. .. *S. subsecundum*

CONTROLLING THE BLOWFLY PEST?

At Sandringham recently, watering the garden one hot morning about 8 a.m., in a dry, sandy corner was a shallow basin-shaped depression, evidently dug by a cat. Noticing the movement of a small white object at the side of the "basin" I investigated and discovered dozens of maggots about ⅜in. long feebly wriggling and being overrun by small brown ants (Argentine ants). The little creatures were busily engaged appearing and disappearing through small holes in the sides of the "basin". Anxious to dispose of both pests, I poured boiling water into the depression, leaving corpses of the maggots strewn around the hole. Three hours later most of the corpses had disappeared and a round hole at the bottom showed ants coming and going disposing of the remainder. A few ants wandering about were the only signs of life next day.

—E.E.B.

THE DARLOTS CREEK (VIC.) SANCTUARY

By Noel F. Learmonth (Portland)

In *Vic. Nat.*, June, 1949, p. 40 appeared a notice announcing a new sanctuary on Darlots Creek, near Tyrendarra (Vic.). Members of the Portland F.N.C. have made several visits to the area and listed some interesting species of fauna and flora on the 1,200 acres of basalt barriers, marshes and open forest. Water-loving birds make up one-third of the 125 species listed to date, the best find, Glossy Ibis (*Plegadis falcinellus*) being seen by several observers last winter; the bird was with Straw-necked (*Threskiornis spinicollis*) and White Ibis (*T. molucca*). These White Ibis have a rookery of about 200 nests on flattened-out tussocks on the creek bank. Brolgas (*Megalornis rubicundus*) visit the area but do not nest here; they and Corellas (*Kakatoe tenuirostris*) come in from further east where both are common. White Egrets (*Egretta alba*), Royal (*Platalea regia*) and Yellow-billed Spoonbills (*P. flavipes*), Nankeen Night Herons (*Nycticorax caledonicus*) and Brown Bitterns (*Botaurus poiciloptilus*) all help to justify the Sanctuary's proclamation. Ten species of diurnal birds of prey (*Accipitriformes*) have been listed, from Wedge-tailed Eagle (*Uroaetus audax*) to the beautiful Black-shouldered Kite (*Elanus axillaris*); the latter is quite a newcomer, being practically unknown till September, 1951. Then there are, among others, Emu Wrens (*Stipiturus malachurus*), Fantail Warblers (*Cisticola exilis*), Grebes, Ducks (seven species), Crakes, Parrots, Honey-eaters and even an Oriole (*Oriolus sagittatus*), Azure Kingfisher (*Alcyone azurea*) and Barking Owl (*Ninox connivens*).

From Mr. Cliff Beauglehole come the names of some interesting botanical species he has recorded from the Sanctuary. Among nine ferns or fern-like plants are Common Azolla (*Azolla filiculoides*) and Short-fruited Nardoo (*Marsilia hirsuta*). We have not found Azolla on any other stream in Portland District, and the Nardoo is confined to one small swamp, the only record for S.W. Victoria. Wm. Allitt recorded it "on Darlots Creek near Ettrick" over 80 years ago, and the Portland Club had a long search before rediscovering the plant. Water Speedwell (*Veronica anagallis*) is an introduced plant but has spread along miles of the creek and is the only Victorian record. Deep-rooted in cracks of basalt barriers grow acres of Tree Violets (*Hymenanthera angustifolia*), much more like a box-thorn than a violet: some bushes are 5 feet high and 20 feet around, very thorny, almost leafless, and covered in lichens. Many years ago landholders regarded it as a pest and pulled out the bushes with bullock teams, so great is the strength of the rock-bound plant—a violet. However, the area also grows another violet—the Purple Violet (*Viola betonicifolia*) on scrubby wet flats. The creek is a real home for two beautiful flowering plants—Purple Loosestrife (*Lythrum salicaria*) whose showy heads stand out above the rushes, and Large Bindweed (*Calystegia sepium*) with its large pink flowers climbing over the dense water vegetation. Water wood-ruff (*Asperula subsimplex*) is most interesting, as in Victoria it is only found in the S.W. corner and elsewhere only in Tasmania. Dominant plants along the stream are Tall Spike Rush (*Eleocharis sphacelata*), Common Reed (*Phragmites maxima*), Bulrush (*Typha angustifolia*), Floating Pondweed (*Potamogeton tricarinatus*), ~~Ell~~-weed (*Vallisneria spiralis*), Mud-dock (*Rumex bidens*), Water Parsnip (*Sium latifolium*) and Gipsywort (*Lycopus australis*). Of floating plants Common Duckweed (*Lemna minor*) and a liverwort (*Riccia natans*) appear in great masses with the Azolla. Finally there are the Willows, groves of them—Weeping (*Salix babylonica*) and Basket (*S.* sp.)—in places completely blocking the creek.

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In the Sanctuary Darlots Creek crosses the Mount Eccles lava flow from west to east and forms a series of rapids over which the pioneers crossed in the early "forties" the "hitherto uncrossable Darlots Creek". As it is an ever-flowing stream twenty feet wide, ten feet deep, with treacherous, boggy banks, it was, and still is, a formidable barrier.

EXCURSION TO MOUNT WILLIAM

Held on March 22, showery weather, with lowering clouds, prevailed most of the day. Leaving Essendon about 9 a.m. in a fully-booked parlor-car, via the Romsey Road, granitic and sedimentary rocks, overlain with basalt, were noted at Bulla.

Passing Goldie North school, the Lancefield-Pyalong road crosses the Divide at 1,800 feet, a mile west of Mt. William, whose timbered summit at 2,639 feet was shrouded in mist. Shortly after this the bus was left and some conspicuous granite tors and "balanced" rocks inspected, en route to the aboriginal "quarries" which are on a spur of diabase rock at 2,000 feet elevation, and a mile north-east of the peak.

The Mt. William fault line roughly forms a boundary between Silurian (to East) and Ordovician rocks. To the east of the North and South Goldie spur are diabase, lavas and tuffs; whilst to the west are cherty shales and slates of Ordovician age. To south and east are volcanic plateaus, at varying altitudes, mostly cleared to form rich pasture and farm lands.

The aboriginal quarries comprise heaps of rock chippings; resulting from the work of the most primitive of human artificers, though active barely a century ago.

For toughness and durability, this diabase greenstone was superior to that of other Victorian localities as a material for stone axes; this being realized by the aboriginal family which discovered these "quarries". According to A. W. Howitt, it was the first known instance of property being vested in a family as distinct from a tribe; so was learnt a principle of economics, viz., division of labour and progress by specialization.

Messengers came from as far as Mt. Gambier (S.A.) and the Riverina (N.S.W.) to obtain stone axes from this family, bringing gifts of food and equipment in exchange. As the fame of its product spread, the family then had little need to hunt. Hence, with food, etc., supplied, there was more time to concentrate on making better axes. The aboriginal chipped with his stone tools from the edge of the axe inwards, taking the stone off in flakes. At each point of impact there is a small "cone of percussion", showing where the blow was struck; and so distinguishing his chipping from the disintegrating effect of natural agencies. A series of such marks is thus evidence that the chipping was the work of human hands.

Many axes in various stages of manufacture were scattered amongst the numerous chips heaped here; each being conscientiously discarded because of some flaw. The family ownership of these quarries was upheld by tribal councils who disciplined some of the Avoca tribe which raided the workshop and stole some partly-completed axes.

Resuming our trip, after lunch, Pyalong was traversed; and Mollison's Creek, draining granitic country, in places examined on foot, was generally followed downstream past Glenaroua. Continuing towards Tallarook, crossing the Sugarloaf and Sunday Creeks and a "tongue" of basalt extending north from near Mt. Piper, and visiting the Boulton wildflower sanctuary, the Hume Highway was followed, and the city regained about 9.15 p.m.

A. W. Burston.

PROTECTION OF NATIVE FLOWERS

To the Editor,—

The Council of my Society has directed me to correct a misconception of the efficiency of the Wildflowers and Native Plants Act in N.S.W.

My Society is of the opinion that the licensing system in this State is most ineffective and has led to considerable abuse and graft. This view is shared by all the bodies interested in conservation that I have had contact with besides numerous private individual and Trust bodies such as those governing the Kuring-gai Chase and Bouddi National Park (near Gosford). We are, as a matter of fact, most despondent about some of our "spectacular wildflowers" such as the Native Rose and the Waratah, the last-named of which, we understand, is stolen from our National Reserves and sold on the Victorian markets at high prices. As a constant visitor to the sanctuaries and the wild life lands I can say personally that wildflowers are not "noticeably re-asserting themsmelves" . . . far from it!

The main abuse arises from difficulty in policing the act. Licenses are issued but flowers are stolen willy-nilly from reserves and Crown lands, the tags being affixed to bunches of flowers that are not taken from the so-called grower's property. Frequently, "growers" have admitted that they could not possibly grow the great masses of blooms offered for sale.

We have come to the conclusion that only prohibition of the sale of all wildflowers other than Christmas Bush will prevent the loss for all time of our rich floral heritage. We believe sufficient Christmas Bush is cultivated to justify the exemption.—Yours, etc.,

ALLEN A. STROM,

Honorary Secretary, Wild Life Preservation Society of Aust.

To the Editor,—

Mr. Strom's remarks on the inadequacy of the licensing system in force in New South Wales under its Wildflower Protection Act are justified by a knowledge of deficiencies in its administration more intimate than I can ever hope to possess. The comment which his Society regards as unjustified was based on reports which, I have no reason to doubt, would be quite true for certain localities although evidently far from true in others.

I am told that wildflower thieving in Kuring-gai Chase is rampant and the thieves so determined that rangers who have attempted to intercept them have been threatened with violence. However deplorable this sort of thing may be it seems hardly fair to blame the licensing system for what is happening. Rather should its administration be condemned. If the New South Wales Government, in policing the Act, were to spend a small fraction of the money that it now spends on policing the Gaming, Licensing and similar Acts governing the morals of the community, I imagine that the now-vanishing wildflowers would indeed re-assert themselves in all localities.

Public interest in native wildflowers is continually increasing and if the public wants to grow them and use them for decorative purposes in preference to the cultivated plants and wildflowers of other lands why should they be forbidden to do so? Anyway, some of them are so little known that only specialists would recognize them as native plants, and complete prohibition would be just as hard to police as the present restrictions.

It is my personal view, but one that is, I feel sure, shared by many people, that the best protection of all lies in a plant's widespread cultivation in people's gardens. It is certain that West Australia's Brown Boronia and the Geraldton Waxflower require no protection for their survival, and

Mr Strom himself feels that the New South Wales Christmas Bush should be exempted from the prohibition due to its widespread cultivation. Unless the flower lover and horticulturist become familiar with them as cut flowers, they will have little desire to possess them as growing plants, and unless they are cultivated they will inevitably disappear from all places where man inhabits.

I *do* doubt the wisdom of a blanket prohibition on the sale of wildflowers. Why not press for the prohibition by regulation of specified plants? In New South Wales the sale of the Waratah and *Boronia serrulata* would seem to merit such a ban. We in Victoria could turn our attention to such plants as *Boronia Muelleri* and the Fairy Wax-flower, both of which appear to have captured the fancy of dealers in cut flowers. Both are listed in the schedule of protected native plants yet in regard to the Boronia, the Council of the Club has been informed that the Forests Commission for a nominal sum licenses dealers to cut out truckloads of it in one of the few Gippsland valleys where it flourishes. This by the authority which administers the Wildflower Protection Act! Furthermore, under the Act the Minister alone can issue the permit, but in this instance the Commission appears to have exceeded its authority and dispensed with that formality—all in the cause of fire protection in a State forest. Evidently the safety of our State forests and the preservation of our rarer wildflowers are not completely compatible aims. If we cannot ensure complete protection at least we can strive to mitigate outright destruction, and one way of doing that is to introduce the licensing system and endeavour to persuade public opinion that it is worth policing effectively.—Yours, etc.,

J. Ros Garnet.

FLYING FOXES ON THE MORNINGTON PENINSULA

An article in the *Peninsula Post* of March 5, 1952, stated that flying foxes had caused havoc among the plums, destroying fruit and breaking down limbs of trees. Peaches had also suffered, and orchardists feared attacks on apples. Growers had spent sleepless nights, as well as ammunition, in shooting the pests, but when disturbance subsided they came back. Old-established growers at Tyabb-Hastings say this is only the second time flying foxes have visited the district in numbers.

Those who have read Francis Ratcliffe's *Flying Fox and Drifting Sand* will remember that he says that flying foxes, or fruit-eating bats, are pre-eminently warm country animals, but in Australia they make seasonal migrations. Usually the wave peters out somewhere near the Victorian border, but it is thought that the recent Queensland bushfires drove foxes further south this season.

Flying foxes, says Ratcliffe, are essentially creatures of the jungle, drawing sustenance from the blossoms. Had they been content to stay there, they would have remained comparatively unimportant members of the Australian fauna. If their natural food is abundant, they usually leave the orchards alone, but when they do attack most of the commercial crop is safely picked before it attracts their attention, as they prefer their fruit ripe. Although raids of flying foxes may sometimes be a serious matter for individual growers, the crops of all of them put together form an insignificant item in the diet of the huge flying fox population.

—E.L.M.

COMMUNAL SPIDERS

By W. Perry (Eaglehawk, Vic.)

While at Lake Boga (Victoria) in February, 1943, my attention was attracted by a great number of spider 'nests' on numerous trees. These nests, which varied much in size, consisted of masses of web through which were numerous passageways. While some were as small as a tennis ball, others were much larger. One particular nest was at least three feet long and as many feet in girth. The makers and inhabitants of these nests proved to be the species of cribellate spider, *Badumna varia*. These spiders are small, the female's body length being five sixteenths of an inch, the males one-sixteenth of an inch less.

On pulling a nest to pieces, large numbers of both sexes were seen, which observation prompted me to take one nest and count the inmates. The nest chosen was small, roughly cylindrical in shape, and approximately seven inches in length by three inches in diameter. This was placed in a cardboard box, pulled to pieces, and by the exercise of much vigilance, all the spiders were caught and counted.

In all, there were 61 spiders, comprising 47 females and 14 males. It might not be exaggerating to estimate spiders in some of the larger nests in thousands.

Many cast skins were found, indicating that moulting takes place within the nest.

Nothing is known as to the food of these spiders, but their huge number throughout these districts must take an enormous toll of insects per annum.

The webs of many cribellate spiders, due perhaps to the rather coarse nature of their threads and their unusual structure catch dust easily. The Lake Boga nests were very dirty, due no doubt to the severe dust storms which occasionally occur in this sandy region. Many of the nests were on Pepper-trees (the introduced *Schinus molle*), while a number of citrus trees in a nearby property were almost matted. Small nests were observed on Eucalyptus trees along the road from Bears Lagoon to Swan Hill. Perhaps to the spiders' disadvantage is the fact that these matted nests or webs must be injurious to the trees through harbouring pests and preventing leaves to function in their normal manner.

For the identification of these spiders I am indebted to Mr. R. A. Dunn, Honorary Arachnologist, National Museum of Victoria.

BIRD NOTES FROM THE MURRAY VALLEY

Mr. Jim Watson, country member at Albury, writes: "On the afternoon of Christmas Day (1951), I took a short outing to the lagoon behind Wodonga, and sighted a pair of Crested Grebes (*Podiceps cristatus*) feeding young, and several Nankeen Night Herons (*Nycticorax caledonicus*), which have not been noticed previously this summer. The following day, Boxing Day, was one to remember. I waded right into the back of the Kiewa Flat country, and discovered as fine a Cormorant rookery as one could wish for—a big gum-tree some 90 feet high held nests on nearly every fork, about sixty or more I would say at a guess. At least three species—Little Pied (*Microcarbo melanoleucus*), Little Black (*Phalacrocorax ater*) and the larger Pied (*P. varius*) were nesting together. Most nests held young, and very bad-mannered young too, if one went close, for they spewed half-eaten yabbie, etc., down in large quantities, so my observations were made at a respectable distance. On a fallen tree in the water, and on two low saplings, were clustered other nests of the Little Pied and Little Black and close scrutiny could be made of the young and eggs in these. What disgustingly ugly and filthy little creatures they were, too, with their half-naked bodies and vulture-like heads: some were nearly ready to fly.

Close to this colony was a reed bed covering perhaps 50 to 100 acres, and here the White Ibis (*Threskiornis molucca*) were nesting in numbers. I estimated from 50 to 150 nests, but it was hard to gauge accurately as so many of the young birds were already able to fly. Those still on the nests made an interesting picture, though they took to the reeds immediately a closer approach was attempted. Two nests only contained eggs No Straw-necked Ibis (*T spinicollis*) were nesting, though odd birds were flying around, along with scores of Egrets, Spoonbills (two species), Herons, and many Nankeen Night Herons, including young birds. Two large brown birds disturbed from the reeds obviously were Bitterns (*Botaurus poiciloptilus*)—birds for which I have been searching for many years, but up to now, unsuccessfully

H C.E.S

"INTRODUCTION TO MYCOLOGY"

(A Review)

By J. H. WILLIS

So extremely important have fungi become in man's economy and so numerous are the genera and species—about 39,000 were on record ten years ago, not including the lichen-formers—that it is difficult to gain a satisfactory impression of the whole vast fungus realm. We need a completely modern approach to the subject, and that has been attempted by Dr. J. A. Macdonald, of St. Andrew's University, Scotland. His firmly bound octavo volume of 177 pages, which appeared last year, takes us through the various classes and orders of fungi as at present recognized and deals with the major phenomena in general terms. There is a short chapter on mycorrhiza and a final one on lichens. Line drawings aim at explaining the diversity of reproductive structures, but leave much to be desired; those of *Stereum hirsutum* and *S. purpureum* on page 111, for instance, are hopelessly crude and remind one of an inverted *Hydnum* and some extraordinary polyporoid growth respectively.

Australian students will be disappointed at the failure to mention a single "vegetable caterpillar"—those amazing fungi of the genus *Cordyceps* which parasitize insects and reach their highest development in southern Australia (*C. taylori* may produce spectacular fruiting bodies a foot in height). The highly fascinating subject of luminosity is dismissed in two lines, and there is no treatment—apart from a scant reference to *Penicillium notatum*—of the very important modern developments in fungal antibiotics. With these and other omissions, one wonders whether the little volume is really worth 21/-; in this regard it compares unfavourably with J. Ramsbottom's *Fungi*, which was distributed by Benn's Library in 1929 for sixpence! *Introduction to Mycology* is obtainable through Butterworth & Co., 6-8 O'Connell Street, Sydney, and was published by the same firm in London

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PROCEEDINGS

The Annual Meeting of the Club was held at The Herbarium on Tuesday evening, June 10, 1952. About 100 members and friends attended.

Mr. Eric Rush and Miss Joyce Braithwaite were welcomed as new Ordinary Members of the Club.

The Secretary's Annual Report was read and received on the motion of Mr. Chalk, seconded by Mr. Hanks, and was adopted on the motion of Mr. Sarovich seconded by Mr. Dickens.

Miss Fletcher, the Hon. Treasurer, presented the Club's Financial Statement. After discussion it was moved by Mr. Miller, seconded by Mr. Chalk, that the statement be received and adopted. Mr. Coghill moved that congratulations be accorded to the Hon. Treasurer; seconded by Mr. Stewart. Mr. Chalk, Hon. Auditor, then reviewed the Club's finances over the past year.

The retiring President gave a short and stimulating address on the opportunities that existed for our Club to carry out the ideals for which it stood.

The election of Office-bearers and Committee for the ensuing year then took place. As only one nomination had been received for President, that of Dr. M. Chattaway, Mr. Lord then declared Dr. Chattaway elected. Before vacating the Chair in her favour he thanked all members of Council for their work during the past year, also those members who had found it necessary to retire before the year had ended. Dr. Chattaway took charge of the meeting and the election of Office-bearers proceeded.

A fresh ballot had to be held when three members tied for election to Council. Names of new Office-bearers are on inside back cover.

On the motion of Mr. F. Lewis, seconded by Miss Fletcher, Messrs. Chalk and Hooke were nominated as Club's Auditors, and duly elected. They were thanked for their past services to the Club.

The President announced that two old and valued members of the Club, Mr. V. H. Miller and Mr. L. W. Cooper, had been proposed as Honorary Members. This was received with applause and they were duly elected.

A letter had been received from the Director of the National Museum stating that they would be celebrating their centenary early in 1954 and asking if any members had any information which would be of use in the compilation of a History of the Museum, he would like to receive it.

The subject of the By-Laws was thrown open for discussion, but there were no comments from members present.

EXHIBITS

BOTANY—Greenhoods from Beaumaris, growing in tin. Increased from 12 bulbs in 5 years, being fed on ti-tree leafmould.—Mr. E. Rush. *Pterostylis fishii*, from Woodside. Fungi from Yarram-Woodside—Mr. P. Fisch. Seeds of *Flindersia pubescens*—Mr. K. Atkins. Dagger Hakea (*Hakea pugioniformes*)—Mr. A. C. Brooks.

SHELLS—Marine Shells, Family Muricidae including *M. denudatus* Perry, *M. triformis* Reeve, *M. angasi* Crosse from Victoria, and *M. stainforthi* Reeve (W. Aust.), *M. endivia* Lam. (Mauritius), *M. palmarosae* L. (Ceylon), *M. tenuispina* Lam. (Ceylon), *M. pinnatus* Wood (China), *M. cervicornis* Lam. (N. Aust.), *M. brandaris* Linn. (Medit.), *M. trunculus* Linn. (Medit.)—Mr C. J. Gabriel, and Miss Macfie.

NESTS—Nests of *Acanthiza diemenensis*, and *Acanthornis magnus* (Tasmania). Bird Chart—"Some Insectivorous Birds of Victoria".—Miss Wigan.

ENTOMOLOGY—Phasmia—Miss Balaam.

ARTIFACTS—Two aboriginal artifacts found together at South Traralgon—axe and sharpener—Mr. F. Lewis.

FISH—*Clinus perspicillatus* (C. & V.)—Mrs. Freame.

WINTER FLOWERING SHRUBS

The only native shrubs in my garden which flowered from the first day to the last of winter were Rosemary Grevillea (*G. rosmarinifolia*) and the common greenish-flowered Correa (*C. reflexa*), but those which flowered for many weeks during winter included a red variety Correa, Grampians Thryptomene (*T. calycina*), Long-leaf Waxflower (*Eriostemon myoporoides*), *Chorizema cordatum*, and the pink form of the Purple Coral-pea (*Hardenbergia violacea*, var.). Wattles which flowered during winter include the Golden Rain (*Acacia prominens*), Cootamundra (*A. Baileyana*), Coast (*A. sophorae*), and Green or Early Black (*A. decurrens*).

As the greater glories of spring advanced, the Swan River Pea (*Brachysema latifolium*), Geraldton Wax Plant (*Chamelaucium uncinatum*), Heath-myrtle (*Micromyrtus ciliatus*), Fairy Waxflower (*Eriostemon obovalis*), Olive Grevillea (*G. oleoides*), Showy Bossiaea (*B. cinerea*), Common Beard-heath (*Leucopogon virgatus*) and Common Heath (*Epacris impressa*) were all in flower.

I have mentioned enough shrubs to show that an Australian garden need not lack colour during the winter, but a more experienced grower could doubtless add many more attractive plants to this list.

—A.E.B.

A NEW ORCHID FROM NORTH QUEENSLAND

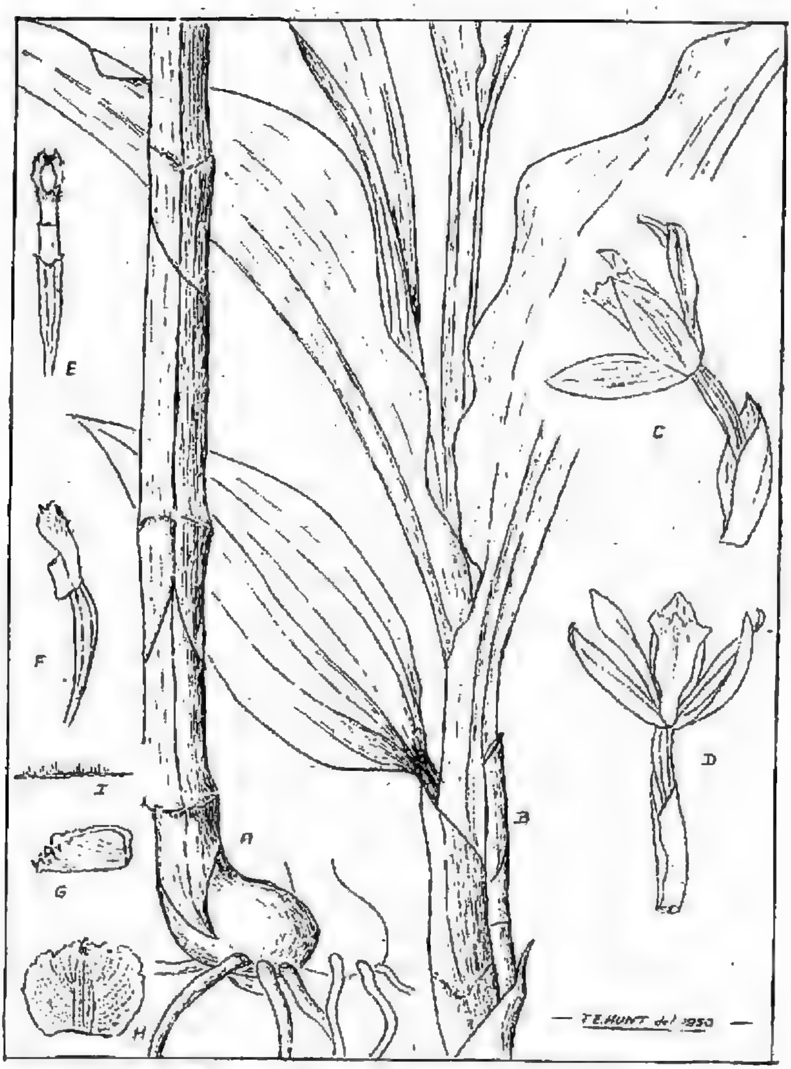
By T. E. Hunt, Ipswich, Queensland.

Phaius pictus sp. nov.

Herba terrestris valida. Caulis circa 60 cm. altus, gracilis, erectus, quadrangularis, ad basin bulbo parvo (circa 3 cm. diametro) praeditus. Folia inferiora ad squamas vaginantes redacta; folia superiora 4-5, lanceolata, circa 40 cm. x 10 cm., plicata, acuta, petiolata. Inflorescentia e quolibet nodo circa 90 cm. longa, multiflora, erecta. Bracteae circa 2·7 cm. longae, latissimae, caulem amplectentes. Ovarium cum pedicello 2·7 cm. longum, curvum. Flores circa 5 cm. diametro, aurei, extus viride et intus rubro notati. Sepala et petala aequilonga, 2·6 cm. longa, lanceolata, acuta; sepalum dorsale 5 mm. latum, segmenta alia angustiora. sepala et petala obscure multinervata et basin versus parce pilosa. Labellum 2·1 cm. longum, erectum, aureum utrinque rubro valde notatum; calcar tenue, curvum, basi columnae adjunctum, cavo dense pubescenti; lamina subquadrata, e medio basin versus incurva e medio usque ad apicem patula et marginibus undulata, lineis duabus latis obscuris notata, utrinque parce pilosa, intus prope apicem dense pilosa. Columna aurea, erecta, 1·5 cm. longa, parce pilosa; alae serratae, antheram cingentes ea haud longiores. Anthera flava, parce pilosa. Stigma latum, profundum, alis columnae amplectum.

Habitat: Queensland—Cook District, on Bellenden Ker Range above 2,000 feet. *Leg.* J. H. Wilkie, May, 1947. (TYPE, in Queensland Herbarium, Brisbane).

A terrestrial, with stem up to 60 cm. (two feet) high, slender, erect, 4-angled, swollen at the base into a small bulb up to 3 cm. in diameter, green, nodes above the bulb 5 or 6. Lower leaves reduced to sheathing scales, a free lamina appearing at about the fourth from the base; upper leaves 4 or 5, elliptical, plicate, up to 40 cm. long and 10 cm. wide, acute, petiolate, the petiole about 10 cm. long on the uppermost pair. Inflorescence axillary, appearing from any of the nodes above the bulbous base—in the two flowering plants received, the inflorescence arose in both cases from the third node above the bulb, in one 20 cm. and in the other 30 cm. from the ground. Raceme up to 90 cm. long, many-flowered, erect. Bracts 2·7 cm. long, very broad, sheathing, pale green. Pedicel with ovary 2·7 cm. long, curved. Flowers about 5 cm. across, deep buttercup yellow, somewhat greenish outside and heavily coloured inside with rich red. Dorsal sepal 2·6 cm. long, 5 mm. broad, lanceolate, acute; lateral sepals narrower. Petals equal in length to the sepals, but much narrower; all these segments with several longitudinal veins, the central three more prominent than the others, and with a few scattered short, white setae at the base. Labellum 2·1 cm. long, erect, the narrow curved basal spur fused to the base of the column; the free lamina as broad as long but incurved so as to embrace the column, spreading anteriorly, entire, margins undulate-crisped, plate with two broad,



KEY TO ILLUSTRATION

(A.) Lower part of pseudo-bulb. (B.) Portion of the upper part of pseudo-bulb, showing axillary inflorescence and lower leaves. (C.) Flower from side. (D.) Flower from beneath. (E.) Column from front, anther removed. (F.) Column from side. (G.) Labellum from side. (H.) Labellum from above, flattened out. (I.) Cross section of labellum, showing setæ.

(All figures approximately 2/3 natural size.)

flat, hardly discernible raised lines terminating near the tip in a small dense patch of white cilia; upper surface completely beset with long, fine, white cilia, the interior of the spur densely pubescent, the lower surface of the labellum bearing a few shorter cilia; the whole labellum a clear buttercup yellow, with many lines of rich red dots above and two groups below. Column pale yellow, erect, 1.5 cm. long, broader at the top, sparsely beset with short white cila; wings serrated, extending in front of and behind the anther but not exceeding it. Anther yellow, beset also with cilia. Stigma broad, deep, immediately below the anther and embraced by the column wings. Pollen masses oblanceolate, laterally compressed.

The flowers blacken when damaged and when pressed.

This beautiful species differs radically from those already known to occur in Australia and reviewed recently by the late W. H. Nicholls ("The Genus Phaius in Australia", *Vict. Nat.* 67: 10-15, May, 1950). The species discussed there belong to swamplands and wet, boggy places in the hot, humid coastal belt and estuaries along the east coast of Queensland and the Northern Rivers District of New South Wales, and are simlar to each other in growth: they form very large pseudo-bulbs from which spring the large, plicate leaves and the inflorescence. *P. Pictus* came from an elevation of 2,000 ft. in the Bellenden Ker Range, where the nature of the soil and the climatic conditons would be very different. Its habit alone would prevent any possible confusion with the earlier known species, as the leaves and inflorescence arise from a tall, slender, 4-angled *stem*, with a hardly conspicuous pseudo-bulb at its base.

Although the flowers are somewhat smaller than those of the other Australian species, their rich clear colouring (buttercup segments marked with crimson and backed by large, clear apple-green bracts) makes them very distinctive and of undoubted horticultural value. Apparently this is a rare plant, even in its restricted habitat, so it is to be hoped that the rugged terrain and jungles of the mountains, which have hidden it so long, will effectually prevent its paying the price of its beauty.

OBITUARY

It is recorded with regret that Mr. Jack Hardy, who was on the staff of the printers of *The Naturalist* (Brown, Prior, Anderson Pty. Ltd.) died on July 3 at the early age of 43 years. His willing help and friendly co-operation over the years meant a great deal to busy editors of this Journal, and our sympathy goes out to his wife and family.

—I.M.W.

FIELD NATURALISTS CLUB OF VICTORIA

STATEMENT OF RECEIPTS AND PAYMENTS FOR 12 MONTHS ENDED APRIL 30, 1952

GENERAL ACCOUNT

RECEIPTS		
Subscriptions—		
Arrears	£25 5 6	
Current	613 7 2	
Life Membership	6 10 0	
		£645 2 8
Sales of *The Victorian Naturalist*		18 18 8
Advertisements in *Naturalist*		74 5 0
Interest received—Library Fund		1 12 6
		£739 18 10
Excess of Payments over Receipts for year		47 11 5
		£787 10 3

PAYMENTS		
The Victorian Naturalist—		
Printing	£546 5 0	
Illustrating	73 10 0	
Despatching	26 4 9	
Index	12 17 6	
		£658 17 3
Reprints		0 5 0
Postage		33 8 1
General Printing and Stationery		36 3 7
Library		2 11 11
Rent, Caretaking and Meetings		21 5 0
Donations		7 7 0
General Expenses		27 12 5
		£787 10 3

BUILDING AND CONTINGENCIES ACCOUNT

Receipts	
Interest on Investments	£31 16 3
Sale of Publications	41 3 3
Sale of Badges	5 3 0
	£78 2 6

Payments	
Bank Overdraft at 30/4/1951	£26 10 7
Cost of Printing By-laws	11 5 0
Purchase of Publications	8 12 6
Bank charges and interest	0 17 4
Balance in Bank on 30/4/1952	30 17 1
	£78 2 6

LIFE MEMBERSHIP ACCOUNT

Balance in Savings Bank at 30/4/1951	£55 5 0	Taken into Ordinary Income of year to 30/4/1952	£6 10 0
Interest on Current Account	1 4 0	Balance in Savings Bank at 30/4/1952	49 19 0
	£56 9 0		£56 9 0

BALANCE SHEET AT APRIL 30, 1952

LIABILITIES

Building and Contingencies Fund	£980 17 1	
Dudley Best Library Fund	50 0 0	£1,030 17 1
Subscriptions paid in advance—		
Ordinary	£62 13 1	
Life Membership	49 19 0	112 12 1
Excursion Account		67 3 4
Special Donations in hand		49 15 6
Surplus of Assets over Liabilities		1,005 18 2
		£2,266 6 2

ASSETS

Bank Current Accounts—Net Balance			£3 16 1
Arrears of Subscriptions, estimated to realize			25 0 0
Sundry Debtors			45 7 3
Stocks on hand at valuation—			
Publications		£184 0 0	
Badges		30 0 0	214 0 0
Investments—			
Dudley Best Library Fund—			
Commonwealth Bonds		£50 0 0	
Building and Contingencies Fund—			
C'wealth Bonds	£950 0 0		
E.S. & A. Bank Account	30 17 1	980 17 1	1,030 17 1
Library, Furniture, Epidiascope, Loud Speaker and Water Colour Paintings, at valuation			947 5 9
			£2,266 6 2

Audited and found correct,

A. S. CHALK }
A. G. HOOKE } Hon. Auditors.

N. FLETCHER, Hon. Treasurer.

June 10, 1952.

SEVENTY-SECOND ANNUAL REPORT, 1951/52

Your Council has pleasure in submitting the 72nd Annual Report for your consideration.

Another successful year has closed with a total membership of 512, consisting of 335 ordinary members, 147 country members, 7 juniors, 18 honorary and 5 life members.

We have again to mourn the passing of some members of the Club, amongst whom were Mrs. Edith Coleman and Messrs. J. M. Black and Geo, Lyall.

Mrs. Coleman you will remember obtained the Australian Natural History Medallion in 1949. Last year, Mr. Tarlton Rayment, the Club's nominee, received the Award.

The lectures given to the Club during the year have been varied and interesting and generally speaking of a high order. It is noted, however, that very few of our own regular members contribute to these programmes. Surely there are some of us who could give an interesting and edifying evening on subjects to which we have given some special attention. After all, this is supposed to be a club of naturalists devoted to the study of all branches of natural history. If that is so, and if we are really doing some study, why not let the club have the benefit of this knowledge? Perhaps two could share the one evening.

The State Development Committee has presented its report on National Parks to the Government which is now engaged in preparing legislation to implement the Committee's recommendations. Just what form the legislation will take is not yet known, but the Council is keeping in touch with the Minister of Lands on the subject.

We have also been in touch with the Town Planning Authority of Melbourne regarding the possiblity of having some of the Beaumaris/Sandringham area reserved as a Wild Flower Sanctuary, but after a careful examination of the locality by a special sub-committee, the Council found regretfully that such a proposal was impracticable.

You hardly need reminding that finance has given your Council a great amount of worry and anxiety during the year. Continually rising costs have forced us to economize in the size of our Journal, but in spite of this, the Council, in order to make ends meet, very reluctantly had to ask members for an increase in subscription rates. Before this was done every possible avenue was explored, and the action taken was on the unanimous recommendation of the special finance sub-committee appointed to go into the matter. The advertisements in the Journal have recently decreased in number owing to the increasing financial stringency, and this has seriously reduced our revenue too.

The various study groups associated with the Club have functioned more or less successfully during the year They all, however, would gladly welcome new members to their ranks.

A few months ago the Native Plants Preservation Group decided to sever its connection with the Club and now functions as an independent entity under the title of the Native Plants Preservation Society of Victoria. Our best wishes are with this organization in their efforts to preserve for posterity some of our fast disappearing native flora.

The Junior Club at Hawthorn under the able leadership of Mr. Baker and Mrs. Freame is still a most enthusiastic and energetic body of young people. It is an inspiration to attend one of their meetings and note the enthusiasm and interest shown by the members. Mrs. Freame and Mr. Baker deserve our thanks and commendation for their untiring efforts at Hawthorn.

Our By-Laws have now been completed and published after a very strenuous two years' work by Mr. J. Ros Garnet and his committee. Much work is involved in drafting a set of rules such as those we now have.

At this stage, it it fitting to refer to the work of the Council as a whole. They meet monthly starting at 7.45 p.m. and often not finishing a heavy programme of work until nearly 11 p.m. During the year the meetings have been attended by almost 100 per cent. of members. Recently, as you know, our President, Mr. Lord, has been kept away through illness, but we are glad to know he is progressing so satisfactorily. One of our Vice-Presidents, Mr. Davidson, has had to resign because of ill-health.

The first affiliation of another Naturalists Club under our new By-Laws has just been achieved by the desire of the Maryborough Club to be actively associated with us. We give them a cordial welcome.

Now as regards the future, the Club in spite of all the difficulties, financial and otherwise, confronting us, is still a virile and healthy organization. We are a long way from becoming senile. But may we appeal to our members to be more active in the next year in some of the following ways:—

Bring along more exhibts to the meetings, with explanatory comments.

Short notes on matters of interest would also be very welcome to the President at our meetings and to the Editor of the Journal.

(By the way, if you are talking to the Club and have a map on the wall or a slide on the screen, don't look at the screen or wall as you talk—face the audience and speak up, using the microphone if necessary.)

We must not close without mentioning the receipt of a legacy of £25 from the Estate of the late Mr. Forth. Perhaps other members might remember the Club in their wills.

Finally, we must again express our thanks to Mr. Otto for his kind assistance in arranging for the advertisements in the *Naturalist;* to Mr A. W. Jessep for the use of this fine hall and the room for Council meetings; to our honorary Auditors for their valuable help in connection with financial matters; to the Royal Society for the use of the lower hall in their rooms in which to store the Club's Library and as a meeting place for the various study groups; to Miss Morton for valuable help as Assistant Secretary, and Messrs. Ros Garnet and Stewart on the Council for many years, all three of whom are not standing for re-election this year; and finally to all who by their interest and devotion have assisted in any way the work of the Club during the past year.

On behalf of the Council,

F. LEWIS, Secretary

EXCURSION TO THE YOU YANGS (VICTORIA)

The all-day excursion to the You Yangs on May 24 was well attended. On the way the leader drew attention to several monuments erected to early explorers and spoke about the tribal boundary of the early aboriginal owners of the country on the Werribee River. Two very early excursions of the Club to the locality were commented upon and passages from early issues of *The Victorian Naturalist* were read. Birds were plentiful but no unusual species were noted. A Bronze-wing Pigeon sitting in the discarded nest of a Chough was a late record for the nesting of this species.

In addition to those species of eucalypts growing naturally in the area, there are fine stands of this species from all over Australia in the Forestry Reserve. It is a splendid place to see the different types growing together. Twenty-six species of birds were recorded for the trip.

—E. Hanks.

ERRATA

In *Vic. Nat.* 69 : 19, June 1952 ("The Darlot's Creek Sanctuary"), the following typographical slips affect the spelling of several botanical names and call for correction:

From bottom of page 19—second line, read *Salix* (not *Salis*); 6th line, read *Sium* (not *Sunn*); 7th line, read Eel-weed, *Vallisneria* (not Ell-weed, *Vallisueria*); 13th line, read *Calystegia* (not *Salystegia*).

THREESCORE YEARS AND TEN — MR. COGHILL'S NOTEWORTHY RECORD

With a history of nearly three-quarters of a century, the F.N.C.V. has listed not a few remarkable records of membership and service. But surely the record made at the next general meeting (July) should stand as unique. On this occasion Mr. George Coghill will complete his seventieth year of continuous active association.

Joining up in July 1882, when the first President, Sir Frederick McCoy, was still in office, Mr. Coghill's entry pre-dates *The Victorian Naturalist*, now in its 69th volume. The pages of the journal over the years refer consistently and eloquently to Mr. Coghill's efforts, so manifold and varied as to be impossible to give but in barest outline here. Two years only had elapsed when he got into harness as Assistant Secretary; at the same time his father-in-law, the Rev. Dr. J. J. Halley, a keen ornithologist, began his presidential term of three years. When the founder of the Club, Mr. Charles French, Snr., became President in 1897, Mr. Coghill had progressed to Hon. Secretary, maintaining that office until Mr. J. A. Kershaw took over some years later. From 1903/4 until 1919, a period of 15 years saw him as a devoted Hon. Treasurer. On vacating that position Mr. Coghill received a presentation in recognition of his sterling work. Then in 1925/26 the Club bestowed on him its highest honour, that of President.

Although not aspiring to the academic attainments of some of his distinguished colleagues, Mr. Coghill, by virtue of his capacity for hard work in the several offices he held, his infectious enthusiasm for nature, his cheery presence, with wildflower buttonhole, at practically every function of the Club, his business acumen, his power of getting the best out of others, and by the force of his example, is entitled to be regarded as outstanding in our history. To quote one example, both he and the late Mrs. Coghill were unfailing in their efforts at the Club shows, travelling far afield to bring in exhibits, and taking pains in their setting up.

Whenever the ways of finance proved difficult, Treasurers always found Mr. Coghill ready with kindly advice or monetary help. A typical instance of his frequent generosity occurred when the Council, worried over the disappearance from the library shelves of Campbell's *Nests and Eggs of Australian Birds*, decided, after a fruitless search, to purchase a secondhand copy, offered at an expensive figure. Aghast at this, Mr. Coghill insisted on the cancellation of the order and presented his own copy to the library. Some years later the missing volume turned up. It need hardly be mentioned the donor never sought his copy back. So now the Club is the fortunate possessor of two copies of this valuable book.

Until his retirement from the Council in 1942, Mr. Coghill gave a special lustre to the post of Senior Vice-President, dispelling any dark suggestion that such position was a sinecure. He was ever alert to extend a hand to later Presidents who stumbled by the way—the writer at least being one. While he was on the Council, nominations for presidential office were relatively easy, as hesitant nominees invariably acquiesced when assured our stalwart Senior Vice would stand by, to step into the breach if need arose.

With his flair for organization, Mr. Coghill was outstanding with excursions in earlier days. Under his direction, which he avers was thrust upon him at the last moment, one very successful camp-out took place. This was at the Buffalo Mountains over the Christmas period of 1903, fifty years after the first ascent of the range by Baron von Mueller. There were no roads up then, nor tracks as we now know them to-day on the Plateau. Rain fell incessantly, the tents leaked, and walking was the only means of progression. Yet the party contrived to make a complete ecological study of the Buffalo, and even added some notes of a sortie on foot to Mount Bogong. Mr. Coghill collated the material to print over sixteen pages in *The Victorian Naturalist* for March, 1904, an issue often sought for reference, but now out of print. Probably this account can be considered the most comprehensive field survey ever made and written up in the Club's annals.

Members are grateful to Mr. Coghill for all the love, time, labour and money he has lavished on the Club, and congratulate him on the achievement of his seventieth anniversary.

—H.C.E.S.

"DRAWINGS OF BRITISH PLANTS"—PART V

(A Review)

By P. F. Morris

Years of patient botanical research and delineation lie behind this fascinating and valuable addition to the series already reviewed in our journal (*Vict. Nat.*, Oct. 1948, July 1950 and March 1951).

Miss Stella Ross-Craig, with her exceptional flair for descriptive drawings and painstaking accuracy of detail, provides a standard set of illustrations of the *Caryophyllaceæ* established in the British Isles. Each familiar plant is portrayed in natural size and the enlarged dissectional figures of flower parts and fruits are of sufficient magnification to explain their structure quite clearly; the microscopic seed sculptures are works of singular beauty. Miss Craig matches great artistic ability with botanical accuracy, emphasizing in the line drawings those important features by which each plant may be most easily identified.

Many of the subjects are cultivated or occur as weeds in Australia—the chickweeds, campions, pearl-worts, spurries, catchfly and pink; the work should thus be of great value to botanists, teachers and students here. The modern tendency to make every old subgenus a distinct genus has resulted in such a monstrous name as *Kohlrauschia prolifera* for the common Productive Pink, but that is the fault of the botanist and not of the artist. Eventually some 1,800 plates will appear in this excellent series, published by G. Bell & Sons, London.

A CASE OF INSECT CANNIBALISM

On May 21, 1952, three larvae of *Heliothis armigera* (Hubn.) were found on cauliflowers at Windsor, N.S.W. One larva was very small, another about half grown and the third larva apparently mature. The three larvae were left overnight in a matchbox. At 3 p.m. next day, when the matchbox was opened the smallest larva had disappeared and the large caterpillar was found on its side slightly curled around the other caterpillar which it was eating. On examination it was found that the head and all the thorax with the exception of the third left leg of the victim had disappeared.

Cannibalism among phytophagous larvae is by no means unknown, e.g. Hammer in his paper *Life-History Studies on the Codling Moth in Michigan* (U.S.D.A., Bull. 115, part 1, 1912, p. 83) states that when large numbers of mature codling moth larvae are confined some larvae kill, and later devour, weaker larvae. The cannibal then assumes a dull, turbid colour and may be readily distinguished from other larvae. Also it has been observed that several newly-hatched larvae may enter a fruit and a greatly-reduced number will emerge; in the latter case however one might wonder if competition might be a factor.

—C. E. Chadwick

ORCHIDS OF THE WEST

(A Review)

By J. Ros Garnet

It is now some 20 years since the late Mrs. Emily Pelloe published her small handbook on West Australian orchids. In those two decades much has been added to the botanical records of the West, and it is gratifying that one so competent as Mrs. Erickson should have carried on the tradition established by Mrs. Pelloe and undertaken the task of presenting us with an accurate and up-to-date survey of these records insofar as they apply to the orchids of West Australia.

The known species and recognized varieties of Westralian orchid are listed and succinctly described under the appropriate genus, and the text is liberally supplemented by accurate line drawings of typical plants or such parts as will help in the differentiation of species and genera. Delightful, alike to the general reader and the more exacting eye of the botanist, are the colour plates reproduced from the author's original paintings representing some 26 species. These lend distinction to a book which even without them would prove a valuable pocket companion to the field naturalist and bush rambler. Its value for the field observer is enhanced by the inclusion of simplified keys to the various genera and to the species of most of them. By the use of these keys it should prove an easy enough task to identify any of the 147 species recorded for the West.

For naturalists and orchid enthusiasts in other States the book will certainly not lack interest. Anyone at all interested in the curious manifestations of Nature cannot fail to be fascinated by the essays which introduce each of the sections in which the author treats of the 22 genera of orchids known in West Australia. Here, in simple non-technical terms, the reader is introduced to the captivating study of orchids, to their curious and intriguing floral structure and the purpose it serves in the process of fertilization, to the observations of the author herself on the pollination of a number of species each by special insect agencies, to plant migration, reaction to environment, wildflower conservation and protection, and a host of other interesting facets of the natural history of Australia's ground-dwelling orchids.

A few minor errors have escaped the notice of the proof-reader, and it is, perhaps, worth while drawing attention to a few omissions. On page 57 "*P. firmbia*" should read "*P. fimbria*". In the section dealing with the genus Corybas pp. 71-73) the epithet "dilatata" instead of "dilatatus" occurs incorrectly on two occasions. And should not the acknowledgment subscribed to figure 3, page 71, be to Nicholls and Rupp rather than to Nicholls and Rogers?

The errors of omission refer mostly to the notes on the extra-Westralian distribution of species. For example, *Thelymitra nuda* and *T. pauciflora* (page 23), *Microtis orbicularis* (page 48) and *Caladenia deformis* (page 96) all occur in one or more of the States than those listed.

In those pages dealing with pollination by insect agency, full reference is made to the pioneering observations of Darwin and Fitzgerald and to the later researches of Coleman and Sargent, but, sad to say, this reviewer's own paper on the pollination of several species of Phasophyllum published in 1940 is not mentioned although it is not without its interest as a contribution to Australian orchidology.

However, to mention such trivial errors and omissions serves but to emphasize the care bestowed on both the preparation and publication of the book. It is a creditable production and well worth a place on the shelves of anyone at all interested in Australia's unique flora and, of course, especially to the orchid lover. By present-day standards it is by no means expensive.

Orchids of the West, by Rica Erickson; 1951, 109 pp. with illustrations by the author including 23 colour and 9 black and white plates with 4 figures, 9¾in. x 5½in., in buckram boards. Paterson, Brokensha Pty. Ltd., Perth. Price 25/-.

THE ARCHIPELAGO OF THE RECHERCHE. Part 2—BIRDS

(A Review)

By I.M.W.

The author, Mr. V. N. Serventy, was one of the members of the Australian Geographical Society's Expedition which visited the area in 1950. This is the first part published of the full report. It is valuable, not only because it lists and discusses the birds found on this expedition, but gives a comprehensive historical review of, and previously unpublished, reports on the birds found by earlier visitors.

Mr. Serventy's remarks on the diminishing numbers of the Cape Barren Goose (*Cereopsis novæ-hollandiæ*) are disturbing, and it is hoped that stricter control on shooting will be established by the authorities, as he suggests.

The report is well illustrated, fully indexed, and has an excellent detailed map of the Archipelago. Published by the Australian Geographical Society, 23 pages, paper covers, price 3/6.

The Victorian Naturalist

Vol. 69—No. 4 AUGUST 7, 1952 No. 824

PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, July 14, 1952. The President, Dr. Chattaway, was in the chair, and about 120 members and friends attended.

The following new members were elected by the meeting—As *Country Members,* Mrs. C. N. Southwell and Mr. George E. J. Southwell, Iona P.O., via Bunyip.

The President drew attention to the fact that Mr. J. H. Miller and Mr. L. Cooper had been elected as honorary members of the club. Mr. Cooper, unfortunately, was not able to be present at the meeting, but she presented Mr. Miller with a Certificate of Honorary Membership, at the same time pinning a bouquet of wild flowers in his buttonhole. Mr. Miller responded and thanked the Club for the honour conferred upon him.

The President announced that Mr. George Coghill had now completed 70 years' continuous membership of the club, and as a mark of appreciation he was presented with a small framed illuminated scroll which had been prepared by Mr. H. P. Dickins. He was also presented with a buttonhole of wild flowers. Mr. Coghill suitably responded.

The lecturer for the evening, Mr. Norman Wakefield, took his audience with him on an extensive tour of far Eastern Victoria, describing the flora and physical features of the country and illustrating his remarks with a fine series of pictures and reminiscences.

The editor of the *Victorian Naturalist,* Miss Ina Watson, said that a special issue of the *The Naturalist,* dealing with the present position of the Lyre Bird in Australia, would be published in the near future, and that the Ingram Trust had contributed £100 towards the cost of this issue.

The President announced the receipt of a donation of £5 from Mr. Hanks, and one from Dr. Wettenhall for £5/5/-, towards the funds of the club, and expressed her gratitude on behalf of the club for these contributions. She also thanked Miss Raff for the gift of four new books.

Attention of members was drawn to the new screen, purchased recently, which was used this night for the first time.

Mr. Burston drew attention to the fact that the report of the Parliamentary Standing Committee on National Parks had now been published, and Mr. Ros Garnet, amplifying his remarks, referred to the fact that the Government was preparing legislation to implement the recommendations of the General Council. He suggested that, as soon as it was known what form the proposed legislation would take, that Club Members should seriously consider this, and if it did not conform with the ideas of the Club on the matter, they should interview or write to their local Parliamentary Members on the subject.

EXHIBITS

BOTANY—Garden grown wild flowers by Messrs. Seaton, Brooks and Hammit. Mountain Banksia (*B. collina*)—Mr. Jennison.

SHELLS—Cone shells—Miss Macfie. Two Pearly Nautilus Shells, one in natural state, and the other after acid bath treatment; a miniature Pearly Nautilus (treated with acid), an Operculum (cat's eyes) in situ, and two loose ones, all from South Pacific Islands—Miss Edith Raff.

FOSSILS—Fossil leaves in sandstone from Lookout Hill, Airey's Inlet—Mr. Baker.

BIRDS—Body of Eastern Spinebill found in garden—Miss Bryning.

MISCELLANEOUS—Photographs of Mt. Buffalo, also some old photographs of Club members—Miss Wigan. Two volumes on Swiss National Parks—Mr. Popovic.

WHAT, WHERE AND WHEN

General Excursions:

Saturday, August 16—Eltham. Subject: Botany. Leaders: Botany Group. Take 9.15 a.m. Eltham train. Bring one meal and a snack.

Sunday, August 31—Langwarrin. Excursion to Mr. E. J. Rush's property, Robinson's Road. Nash's bus leaves Batman Avenue at 9 a.m., returns to city approximately 6.30 p.m. Bring two meals. Bookings, 7/6, with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Saturday, September 6—Afternoon walk from Heathmont to Bayswater. Subject: Botany. Leaders: Botany Group. Take 1.38 p.m. Fern Tree Gully train, alight Heathmont.

Saturday, September 13—Afternoon walk from South Morang to Diamond Creek. Subjects: Birds and Botany. Leader: Mr. R. Ferguson. Take 12.42 p.m. Thomastown train from Princes Bridge, then rail motor to South Morang.

Preliminary Notice:

Saturday, October 11—Sunday, October 12. The arrangements for a week-end excursion to Maryborough will be announced at the next general meeting.

Sunday, October 19—Parlor coach excursion to Musk and Bullarto. Leaders: Bendigo Field Naturalists' Club. Coach leaves Batman Avenue 9 a.m., returning to city approximately 7.45 p.m.

Group Fixtures:

(At Royal Society's Hall, unless otherwise stated)

Monday, August 25—Botany Discussion Group, 8 p.m.

Tuesday, September 2—Geology Discussion Group, 8 p.m.

Note.—Children under 15 half fare on bus trips.

KENNETH ATKINS, Excursion Secretary.

EXCURSION TO MT. BUFFALO, CHRISTMAS 1952

All members interested are asked to meet Mr. Atkins, Excursion Secretary, at the close of the meeting on August 14, to discuss question of transport costs, etc.

ON THE AGE OF THE BEDROCK BETWEEN MELBOURNE AND LILYDALE, VICTORIA

By Edmund D. Gill, B.A., B.D.*

Summary

Diplograptids from Diamond Creek, illaenids from Templestowe and North Balwyn, and *Monograptus* from Warrandyte throw light on the structure of the poorly fossiliferous bedrock between Melbourne and Lilydale.

Introduction

Highly fossiliferous rocks of Upper Silurian age characterize the Melbourne district, while equally fossiliferous rocks of Lower Devonian age characterize the Lilydale district to the east, but the intervening twenty miles is almost unfossiliferous. The general structure is an anticlinorium (Selwyn 1855-1856, Jutson 1911, Junner 1913, Nicholls 1930, Gill 1942), but there appears to be such ecological change laterally that there is no repetition of the fossiliferous Melbourne strata between there and Lilydale. A great deal of time has been spent by the writer in the past twelve years endeavouring to find index fossils between Melbourne and Lilydale, but worm tubes, unidentified fragments of shells and crinoid columnals are all that have resulted. Some of the fragments and poorly preserved material may assume meaning when more is known of our palaeontology. Work on crinoid columnals shows they have stratigraphic value, but the study is not far enough advanced to throw light on the present problem. However, there have come recently to the National Museum specimens which have thrown light on the age of the bedrock between Melbourne and Lilydale, and an account of these is now given.

Diplograptids from Diamond Creek

"An interesting find," wrote Junner in 1913 (p. 327), "was the discovery of graptolites in black pyritic shales from the Diamond Creek mine. Dr Hall has kindly examined these, and he has informed me that both *Climacograptus* and *Diplograptus* are represented, but he says there was not sufficient evidence to enable their precise age to be determined." Junner's specimens have been found at the University, but the marcasite in them has so oxidized that they are barely determinable. However, confirmation of Junner's record has now been made. Recently the National Museum acquired the palaeontological collection of Dr G. B. Pritchard, and in this are poorly preserved diplograptids in a similar matrix collected by Dr. Pritchard from the Diamond

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* Palaeontologist, National Museum, Melbourne.

Creek mine. A map showing the locality accompanies the specimens, which are now reg. nos. P 15,426-15,429. The graptolites are preserved as whitish films on dark-grey to black shaley siltstone.

After studying these specimens, the locality was again visited, and it was noted that in the spoil heaps of the mine there was very little of this particular rock, and it was found generally a long way from the shaft, suggesting that it came from well down the mine. *Keilorites* was collected, but no other determinable fossil. Taking into account the depth of the mine, and the direction of the workings, it is thought that the graptolitic shale must have come from beds that outcrop very near the crest of the Templestowe Anticline. These are the oldest rocks outcropping in the anticlinorium, as Selwyn (1855-1856) showed and later investigations have confirmed. The diplograptids indicate an age older than Middle Silurian; they could be Lower Silurian or Ordovician, but in view of the general sequence a Lower Silurian age is the more likely (cf. Thomas and Keble, 1933, p. 74).

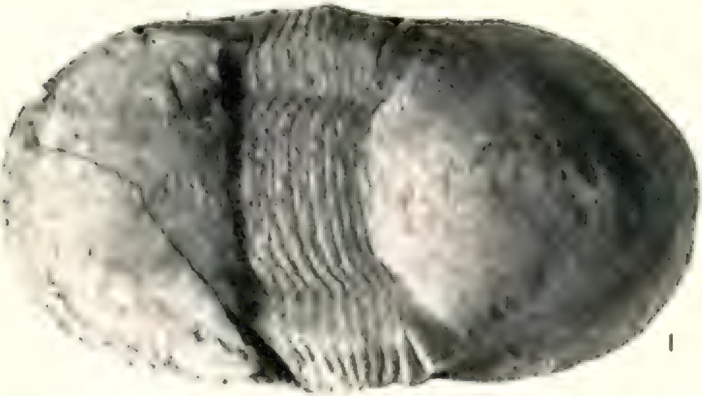
ILLAENID TRILOBITES FROM NEAR TEMPLESTOWE AND NORTH BALWYN

A solitary illaenid trilobite was found by Dr. J. T. Jutson in a quarry "between Heidelberg and Templestowe," and was described as *Illaenus jutsoni* by Chapman (1912). At that time it was the only illaenid trilobite recorded from Victoria. Dr. Jutson has obliged me with more precise information concerning the locality from which the specimen came. It is a quarry at a bend in Bulleen Road, on the east side, half a mile south of Manningham Road, Military Map Ringwood Sheet 1935 grid reference 114,419.

The holotype (Nat. Mus. reg. no. P12,299) is a rather poorly preserved blind trilobite 3.5 cm. long and 1.8 cm. wide, with bumastoid cephalic furrows, traces of a very narrow cephalic border, ten thoracic segments, with an axis half the width of the thorax, and a pygidium with comparatively broad border. Both cephalon and pygidium are inflated, but the cephalon more so than the pygidium. This trilobite is not strictly an *Illaenus*.

In September 1949, Mr. L. M. Fryer presented to the National Museum an illaenid trilobite excavated during the laying of sewerage pipes at 14 Hill Road, North Balwyn, Melbourne, in 1939. This specimen is figured in Plate 1, fig. 1. t iIs not well preserved, but the following features have been noted. *Carapace* 5.5 cm. long in one plane, i.e. not following the contours of the test; 3 cm. wide across the middle of the thorax. *Cephalon* smooth, tumid, the highest part as preserved being about 7 mm. above the plane uniting the anterior and lateral margins. Eyes absent. Dorsal furrows bumastoid. The periphery of the cephalon is so poorly

PLATE I



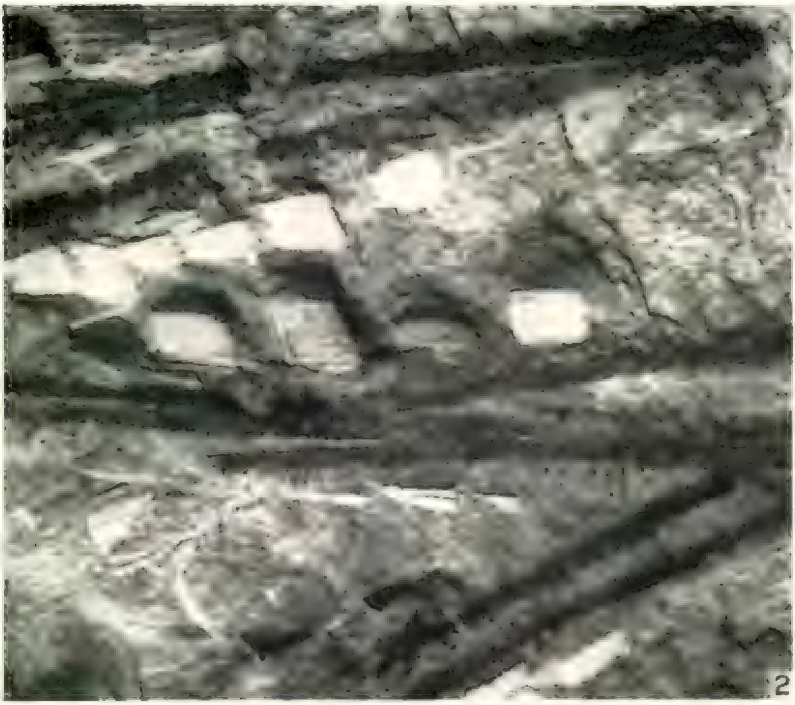


FIG. 1.—*Illaenus* aff. *jutsoni* Chapman. Nat. Mus. reg. no. P 14,719, from North Balwyn, Melbourne. ×2.

FIG. 2.—*Monograptus* aff. *priodon* (Brongniart). Nat. Mus. reg. no. P 14,752, part of slab from Williams' Quarry, Warrandyte, ×2.

preserved that the presence or absence of a border cannot be established. *Thorax* with nine segments visible, and well developed axial furrows. The axis is half the width of the thorax. *Pygidium* smooth, tumid, but less so than the cephalon, its highest part rising about 5 mm. above the plane uniting the posterior and lateral margins. Axial furrows absent. A border averaging 3 mm is present, with fine incised lines on the ventral surface. These are only preserved on the right side of the pygidium, where they show as sub-parallel lines sweeping in towards the inner boundary of the border. A cross-section of the border would generally intercept five of these lines, each of which is of the order of a tenth of a millimetre wide.

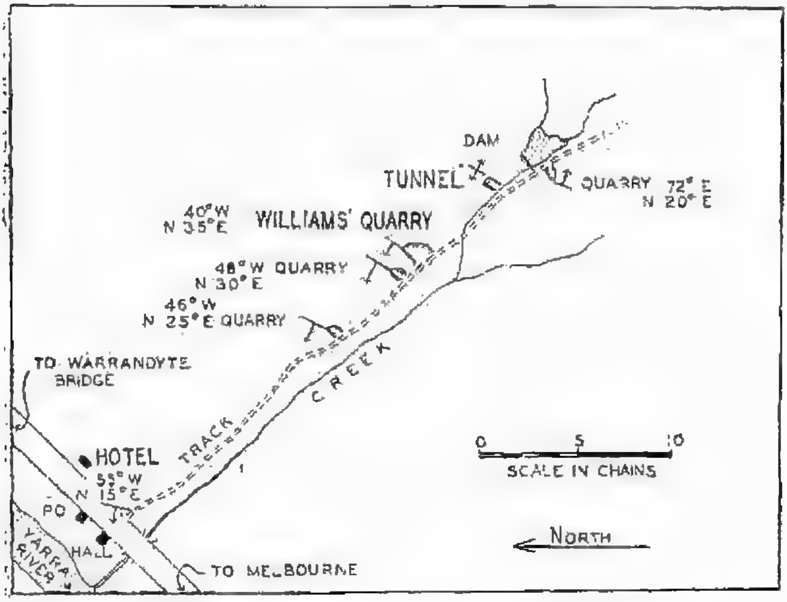
This specimen (Nat. Mus. reg. no. P14,719) may be called *Illaenus* aff. *jutsoni* because it is very similar to it, but it differs in size and the lines on the pygidial border appear to be different. Noting that the above illaenids did not correspond with any described genus of these trilobites, the writer communicated with Dr. A. A. Öpik, who has been studying the illaenids of the *Illaenus* Band at Heathcote (*vide* Thomas, 1937), and he informs me that he has referred both *Illaenus jutsoni* and the Heathcote fossils to a new genus.

The illaenid from North Balwyn comes from the Templestowe Anticline (*vide* map, Nicholls, 1930, while the holotype of *Illaenus jutsoni* comes from the next anticline west, but it is not thought that there is any great difference in age between them. The presence of these trilobites proves an age earlier than Upper Silurian (Ludlow), and in view of their similarity to the trilobites of the *Illaenus* Band at Heathcote, a similar age is probable. Dr. D. E. Thomas informs me that graptolite evidence shows this band to be high in the Lower Silurian (Llandovery).

From this same area Chapman (1914, p. 215) recorded *Chonetes melbournensis*. Chonetids are good index fossils, and so this specimen was investigated. It was collected by Mr. Chapman from "Balwyn, near Templestowe," and this locality, he informed me, is the bank of the Koonung Creek, just east of Bulleen Road (Military Map, Ringwood Sheet 1935, grid reference 115,410). The specimen is National Museum reg. no. P 15,529, and was presented 30:3:10. It is a fragment of a brachiopod, with plectambonitid prosopon. Also in the National Museum are some fossils (reg. nos. P 15,530-15,535) from "Koonung Creek, Heidelberg," collected by Mr. P. Crosbie Morrison, and presented 22:6:20. Upon enquiry, it is learned that this is the same locality as that from which Mr. Chapman's specimen came. From Mr. Morrison's fossils it is possible to say that all the specimens represent a new species of *Plectodonta*. This genus occurs throughout the Silurian and into the Lower Devonian in Victoria, but the only species so far described is *Plectodonta bipartita* (Chapman 1913, Gill 1950). *Plectodonta* has a similar long range in Europe (Kozlowski 1929, p. 117). The *Plectodonta* from Koonung Creek, however, is certainly not *P. bipartita*, for its lacks the characteristic bipartition and has different muscle scars. No further stratigraphical information can be obtained from these fossils until the succession of *Plectodonta* species in Victoria has been studied.

Monograptus from Warrandyte

Mr. Paul Fisch, of Doncaster, noted what looked like graptolites in a piece of ornamental stone delivered to a friend's place. Learning where the stone came from, he endeavoured to find better specimens, but without result. Mr. Fisch kindly reported this occurrence to me, and presented the specimen to the National Museum (reg. no. P 14,752). It is a slab of brownish-grey siltstone from Williams' Quarry, Warrandyte, the precise position of which is shown in text figure 1. Although this matrix could be readily matched in the quarry, further specimens could not be found in spite of a long search by Museum staff. The co-operation of the quarry owner, Mr. V. Williams, was sought, and after some months Mr. Williams kindly brought another piece of rock to the Museum which showed signs of *Monograptus*, but even more poorly preserved. However, this was enough to confirm the original find. Part of the specimen found by Mr. Fisch is



figured (Plate I, fig. 2). Dr. D. E. Thomas kindly examined the *Monograptus* and expressed the opinion that it is like *M. priodon*. It is this form that occurs on the east side of the Lilydale syncline at Macclesfield (Hall 1914, Gill 1942, p. 25), and in the Kilmore district north of Melbourne (Harris and Thomas 1937).

The presence of *Monograptus* proves, of course, that the bed from which it came is older than Late Silurian (Upper Ludlow), and if the form is *M. priodon* the age is probably Middle Silurian (Wenlock), but could be older (Elles and Wood 1913, p. 420). The bed is almost on an anticline.

The finding of *Monograptus* at Warrandyte raises the question of the age of the imperfect fossils recorded by the writer in 1942 from a conglomerate at Warrandyte South. It was stated then (p. 22) that "This conglomerate is considered to be possibly the base of the type Yeringian Series." The conglomerate is probably higher stratigraphically than the *Monograptus* bed, but not very much so. In a symposium on the Silurian-Devonian Boundary in Australia, held at the Hobart meeting of A.N.Z.A.A.S. in January 1949, the writer stated that increased knowledge of our faunas decreased confidence in this "possible base" of the Yeringian, because it is found that earlier determinations have far too wide a connotation. It was pointed out that the lowest clear palaeontological horizon in the Lilydale succession is locality 19 on the Brushy Creek scarp (*vide* Gill 1940), where *Notanoplia* occurs. The species of this genus are present in numerous localities in Victoria and Tasmania (Gill 1950, 1952), and in every case where other fossils of stratigraphical value are present, they are of Yeringian affinities.

David and Browne (1950) wrote, "Gill, examining fossils from near the top of the mudstones, found they included eight species in common with the Baton River beds of New Zealand, and on the strength of this placed the whole series in the Lower Devonian. On the other hand the Yeringian has nineteen of its 259 species in common with the Melbournian Series, and there are at least twenty-one species in common with the Hume Series, and not less than twenty-five, on present identifications, with the Silurian beds of New South Wales as a whole" (p. 209). The first of the above statements is inaccurate, and the second one misleading. The Devonian age was based on the presence of Devonian forms, and on the evidence to show that "in part at least these beds can be correlated with the Baton River beds of New Zealand" (p. 47). The author did not "on the strength of this place the whole series in the Lower Devonian." The conglomerate at South Warrandyte was indicated as "possibly the base of the type Yeringian Series," and the uncertainty of the fossils stressed. The conglomerate was given as a tentative base by analogy with the basal conglomerate of the Walhalla synclinorium, and what the inadequate palaeontological material suggested.

The second statement is inadequate, because based on old determinations that are of very limited value because too generalized. In all cases I have investigated of Lilydale fossils carrying the names of Yass fossils, the names should not be applied. The general similarity of faunas indicates nearness of age, but the differences show the Lilydale beds on the whole to be younger, because the forms are biologically more advanced (Gill 1945, p. 133; 1948*a*, p. 12; 1948*b*, p. 22; 1951).

In the writer's opinion, the following procedure is needed for the clarification of our Silurian-Devonian sequences in Australia:

1. Evidence to consist of fossils from precisely described (and preferably mapped) localities. At present it is not even known from which bed some type specimens came.
2. The fossils to be numbered specimens in a public collection, where they can be studied by anyone wishing to review the evidence.
3. Authors to indicate clearly what stratigraphical horizon they accept as the base of the Devonian. The present writer accepts the base of the Ludlow Bone Bed of the Welsh Borderland as the base of the Devonian (Gill 1950, p. 238).

Provisions 1 and 2 ensure the objectivity of the palaeontological evidence, and 3 ensures the objectivity of the stratigraphical definition.

REFERENCES

Chapman, F., 1912: "New or Little Known Victorian Fossils in the National Museum," Pt. xiv "On Some Silurian Trilobites." *Proc. Roy. Soc. Vic.* 24:293-300.

Chapman, F., 1913: *Ibid.* Pt. xvi. "Some Silurian Brachiopoda." *Proc. Roy. Soc. Vic.* 26:99-113.

Chapman, F., 1914: "On the Palaeontology of the Silurian of Victoria." A.A.A.S. Report, Vol. xiv, pp. 207-235.

David, T. W. E., and Browne, W. R., 1950: "The Geology of the Commonwealth of Australia." 3 vols. 8vo London.

Elles, G. L., and Wood, E. M. R., 1913: "A Monograph of British Graptolites," Pt. ix. *Pal. Soc. Mon.* 1912: 415-486

Gill, E. D., 1940: "The Silurian Rocks of Melbourne and Lilydale." *Proc. Roy. Soc. Vic.* 52:249-261.

Gill, E. D., 1942: "The Tickness and Age of the Type Yeringian Strata, Lilydale, Victoria." *Ibid.* 54:21-52.

Gill, E. D., 1945: "Chonetidae from the Palaeozoic Rocks of Victoria and Their Stratigraphical Significance." *Ibid.* 57:125-150.

Gill, E. D., 1948*a*. A New Trilobite from the Yeringian (Lower Devonian) Rocks of Kinglake, Victoria. *Ibid.* 59:8-19.

Gill, E. D., 1948*b*. "A Gens of Dalmanitid Trilobites." *Journ. and Proc. Roy. Soc. N.S.W.* 82:16-24.

Gill, E. D., 1950: "Preliminary Account of the Paleontology and Palaeoecology of the Eldon Group Formations of the Zeehan Area, Tasmania." *Pap. & Proc. Roy. Soc. Tas. for 1949*, 231-258.

Gill, E. D., 1951: "Revision of McCoy's 'Prodromus' Types from the Lilydale and Killara Districts of Victoria." *Proc. Roy. Soc. Vict.* In press.

Gill, E. D., 1952: "Further Studies in Victorian Chonetidae (Palaeozoic Brachiopoda)." *Ibid.* In press

Gregory, J. W., 1903: "The Heathcotian—a Pre-Ordovician Series—and its Distribution in Victoria." *Ibid.* 15:148-175.

Hall, T. S., 1914: "Victorian Graptolites," Pt. iv. "Some New or Little Known Species." *Ibid.* 27:104-118

Junner, N. R., 1913: "General and Mining Geology of the Diamond Creek Area." *Ibid.* 25:323-353.

Jutson, J. T., 1911: "The Structure and Geology of the Warrandyte Goldfield and Adjacent Country." *Ibid.* 23:516-554.

Kozlowski, R., 1929: "Les Brachiopodes Gothlandiens de la Podolie Polonaise." 4vo. Warsaw.

Nicholls, A., 1930: "The Structural Features of the Silurian Rocks in the Melbourne District." *Proc. Roy. Soc. Vic.* 42:129-133.

Selwyn, A. R. C., 1855-1856: "Geological Surveyor's Reports." *Parliamentary Papers,* Government Printer, Melbourne.

Thomas, D. E., and Keble, R. A., 1933: "The Ordovician and Silurian Rocks of the Bulla-Sunbury Area, and Discussion of the Sequence of the Melbourne Area." *Proc. Roy. Soc. Vic.* 45:33-84.

AROIDS FOUL AND FRAGRANT

By J. H. Willis

In December, 1944 (*Vict. Nat.* 61: 131-136) I presented a few notes on floral odours and sundry attempts to classify them—a subject that still holds fascination for me. Recently (11th January, 1952) I entered the glasshouse for decorative tropical vegetation in the Melbourne Botanic Gardens and became aware at once of a subtle delicate perfume, like the spicy sweetness of stocks (*Matthiola*); it was traced to a single unpretentious bloom of the West Indies aroid *Spathiphyllum cannifolium.* I wonder how many different plants have stock-like scents? The only other one known to me is an endemic mountain heath of New South Wales, *Epacris robusta,* and I shall never forget a visit to the sources of the Tuross and Kybean rivers (south-east of Cooma) in October, 1948. This handsome thick-leaved species, growing in association with the little rubescent *Casuarina nana,* was then in full bloom on sandstone bluffs at Kydra Trig. point (about 4000 feet), its long rigid spikes of thick-set, waxy, pale cream bells exhaling a most delicious aroma of stocks. The discovery was of more than passing interest, since well-marked perfumes are unusual in the family *Epacridaceæ,* and especially so in the genus *Epacris.*

But to return to our fragrant aroid. I was impressed by the diversity of odours manifest in this large family—from indescribable, nauseating stenches to transportingly beautiful perfumes. Probably no plant family on earth exhibits the whole gamut of flower scents. In the highly advanced *Orchidaceæ* numbering some 20,000 species, we certainly find heavy, spicy, vanilla, fruity, lemony, musky and animal-like smells. At the other extreme of monocotyledons stands the comparatively simple, primitive *Araceæ* with even greater contrasts in odour.

Australia's share of the probable 2000 aroid species in the world is almost infinitesimal—a mere seventeen, which, however, is twice the number occurring naturally in North America (excluding Mexico); New Zealand has none at all. Of the 17 species (in seven genera) indigenous to Australia, only two seem odorous enough to have evoked comment, viz. *Alocasia macrorrhiza* and *Amorphophallus galbra*—both very sweet smelling.

The group is essentially tropic, with very rich development in South America. Relatively few members are cultivable out of doors in southern

Australia. Thus, without recourse to a well stocked hothouse, most of us have little knowledge of this large, colourful and intriguing plant family. The late Mrs. Edith Coleman has written on the pollination of a few familiar species, viz. *Zantedeschia æthiopica* (*Vict. Nat.* 53: 147, Jan., 1937), *Arum italicum* (*l. c.* 53: 167, Feb., 1937) and *Alocasia odora* (*l. c.* 65: 140, T.3, Oct., 1948), while in Arthur Mee's *Children's Encyclopædia* (under "Flowers and Their Visitors") is a magnificent series of colour pictures, showing how tiny midges distribute the pollen of the Cuckoo pint (*Arum maculatum*). The form, colour and odour of many aroid inflorescences are doubtless closely linked with the visitations of certain insects which assure their pollination. Discernible odours are absent from hundreds of species, notably those in the gaudy South American genus *Anthurium* (more than 500 species) where colour becomes the chief attracting medium.

Here is a selection of ten different aroids, half of which exemplify the pleasant and half the foul-smelling kind. All but numbers 1, 3, 4, 6 and 9 may be seen in Melbourne, and the citation, *Bot. Mag.* after most species indicates a good colour portrait in Curtis's *Botanical Magazine*.

MALODOROUS

1. *AMORPHOPHALLUS TITANUM* (Western Sumatra). *Bot. Mag.* 7153-5.

In Sumatran jungles occurs the giant of this fantastic genus—a veritable wonder-plant whose inflorescence is most probably the largest in the whole vegetable kingdom. Its huge pleated spathe (purple inside) reaches six feet in height, arising from a tuber about 18 inches in diameter and up to 60 lb. in weight. Natives call it *bunga bangkai* ('corpse flower'), and the allusion is not far to seek: *A. titanum* once bloomed in the tropical house at Royal Botanic Gardens, Kew, where Sir Joseph Hooker (1890) described its stench as "very powerful, suggesting a mixture of rotten fish and burnt sugar."

A. campanulatus (*Bot. Mag.* 2812) is much smaller, but scarcely less remarkable. It extends from India to Papua and the Pacific islands as far as Tahiti, but has not been found on the Cape York side of Torres Strait. This is the *pungo-pung*, subject of a note in the *Victorian Naturalist*, 61: 219, Apr., 1945, wherein Private R. Ryan claimed for it "the most nauseating stench I have ever encountered". *A. rivieri* of Indo-China is a still smaller, less pretentious species which grows well in the open at Melbourne Botanic Gardens. Its bipinnate leaves form an umbrella-like rosette at the top of a dark spotted stem and appear at a different season from the naked flowering scape. The wide funnel-shaped, liver-purple spathe is up to a foot long and for a short period gives out an unpleasant, characteristically indolic odour—doubtless inviting to carrion flies.

2. *DRACUNCULUS VULGARIS* (Southern Europe, from Portugal to Smyrna).

A Mediterranean plant, not infrequently grown in Melbourne gardens, it has tall, boldly spotted stems and is most ornamental. The long, narrow, frilled and inky-purple spathe (to two feet) gives out a smell of putrefaction that has been described by L. H. Bailey [see figure in his *Cycl. Hort.* 1: 1071 (1925)] as a "terrifying odour." The old, and now standardised, vernacular name is 'stink-dragon.'

3. *HELICODICEROS MUSCIVORUS* (Corsica, Sardinia and Balearic Islands).

Lindley (1824), describing this other closely related Mediterranean species in Edward's *Botanical Register*, where it is beautifully portrayed in colour

(T.831), says that the hairy purplish spathe reminded him of "the huge flapping ear of some monstrous animal"; he failed to perceive any carrion-like odour. But E. A. Bowles said of it: "The most fiendish plant I know . . . it only exhales its stench for a few hours after opening, and during that time it is better to look at it through a telescope." I doubt if the species is ever grown in Australia, but would much like to make its acquaintance.

4. *SYMPLOCARPUS FŒTIDUS* (Nova Scotia to Florida, also in Siberia). *Bot. Mag.* 3224.

Of the eight aroids known from Canada and the United States, 'Skunk Cabbage' is distinguished by a very hood-like yellow spathe (about six inches tall), spotted and streaked with purple so as to resemble a giant cowrie shell standing on end; it secretes a carrion odour; but, if any part of the plant be bruised, a strong skunk-like smell is given off. The 'Yellow Skunk Cabbage,' only aroid to be found in Pacific North America (from Alaska to California) is *Lysichitum americanum*, which is figured in *Botanical Magazine* 7937, under the name '*L. camtschatcense*.' Its spathes are entirely lemon-yellow and much more open than in *Symplocarpus*, but they also give off a distinct odour as of skunks. I have seen no living examples of either species in Australia.

5. *TYPHONIUM ROXBURGHII* (Ceylon to Amboina). *Bot. Mag.* 339 and 2324.

A small trim plant with blackish spathe and very long slender spadix. Curtis (1795) attributes to it "an intolerable stench," but examples flowered under glass in Melbourne Botanic Gardens had a curious penetrating smell—like a mixture of mild carrion, Stockholm tar and molasses (if one could imagine such a blend!). There are several indigenous species of *Typhonium* in north Australia, but we lack information as to their aromas (if any). It will be noted that, almost without exception, these aroids with highly objectionable odours share a dark purplish coloration of the spathe. Does it simulate decayed flesh and serve as an additional optical enticement to blowflies?

FRAGRANT

6. *AMORPHOPHALLUS GALBRA* (North Queensland, beyond Cairns).

The specific epithet is an aboriginal word (not an anagram or misspelling of *glabra*, as might be suspected), '*jambolla*' being another name applied by the Cape York natives. F. M. Bailey [in *Queensland Flora* 5: 1696, T.76 (1902)] says, "inflorescence highly fragrant," and it *is* a surprise to find in this genus of so many vile-smelling members one that is endowed with an agreeable scent, particularly as the species is endemic in our continent.

7. *ALOCASIA ODORA* (Himalayas to Indo-China and Formosa). *Bot. Mag.* 3935.

A very hardy adaptable plant with perennial trunk, its pollination was discussed by Mrs. Coleman in October, 1948 (*Vict. Nat.* 65: 140). Sir William Hooker said (1842): "What is wanting in colour is amply compensated by its . . . powerful fragrance." I would place the scent as nearest to that of violets, but it is even sweeter and more refined, not causing "olfactory fatigue." J. Dallachy, writing of our single native species *A. macrorrhiza* (the 'cunjevoi'), ascribed to it a "sweet smell," but did not attempt to define the quality of its perfume—nor, to my knowledge, has anyone else. *A. macrorrhiza* extends from Ulladulla, N.S.W., to the Cooktown region of North Queensland; its spathes are white, rather than green, as in *A. odora*.

8. *ZANTEDESCHIA ÆTHIOPICA* (coast region from Natal to the Cape Peninsula, South Africa). *Bot. Mag.* 832.

The familiar, extremely hardy White Calla Lily needs no introduction. It was naturalized on St. Helena before 1805, and must have reached Australia very early too—it has become almost a feature of the damp, low-lying country surrounding Albany, Western Australia. The delicate scent is not easy to define, but suggests certain true lilies or narcissus species, and has also a slight lemony quality.

9. *PHILODENDRON SELLOUM* (Southern Brazil to Paraguay). *Bot. Mag.* 6773.

A tall tropical climber, its flowers are stated by Sir Joseph Hooker (1884) to emit a "powerful aromatic odour, especially at night." Many of the 260 *Philodendron* species are scented and several such bloom under glass in the Melbourne Botanic Gardens.

10. *SPATHIPHYLLUM CANNIFOLIUM* (West Indies to Colombia) *Bot. Mag.* 603.

And so back to the charming flower which prompted these notes. Sims (1803) depicted its small spreading white spathe and creamy spadix, noting that they diffused "an agreeable odour," yet he did not identify the perfume as stock-like—perhaps that spicy quality is not always apparent.

No dissertation on aroid odours would be complete without reference to two species of economic importance. Swollen green fruiting spadices of the Ceriman (*Monstera deliciosa*) exhale a rich pineapple fragrance at maturity and are reckoned as a delicacy among tropical fruits—Melbourne fruiterers offer them for sale in season. Hardly less remarkable are the enormous, curiously perforated leaves of this scrambler from Central America, which may be seen growing satisfactorily in the fern gully at Melbourne Botanic Gardens. The Sweet-flag (*Acorus calamus*) is an official *Old-world* plant with strongly aromatic oil in its rhizome and, to a lesser degree, in the leaves. It is widely spread in swampy parts of boreal regions, including Britain, and was regarded by Linnaeus as the only truly aromatic plant to be found in high northern latitudes.

Has anyone perceived other distinctive odours among representatives of the *Araceae?*

SILVER-LEAVED EUCALYPTS

Every specimen of the huge red-flowered Rose of the West (*Eucalptus macrocarpa*) which I have ever seen has been badly eaten by insects, and one Melbourne grower of this tree is said to spray his specimen once a fortnight to prevent their ravages. Leaves of the same trees, when growing in the native state in Western Australia, are also said to be frequently attacked.

Recently, when I visited his property near Stawell, Mr. G. A. Hately, who has about two hundred different species of eucalypts growing, expressed the belief that all of the eucalypts with silver leaves are liable to be badly eaten, and pointed to a plant of *Eucalyptus desmondensis* in support of this opinion.

Can any reader confirm this belief, or give a reason why silver gum leaves form such an acceptable part of an insect's diet? Incidentally, Rose of the West is the eucalypt with very large decorative fruits; a specimen from one of Mr. Hately's trees measured four inches across.

—A.E.B.

The Victorian Naturalist

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PROCEEDINGS

The monthly meeting of the club was held on Monday, August 11, 1952. The president, Dr. Chattaway, was in the chair, and about 100 members and friends attended, including Mr. G. Southwell, a country member from Bunyip.

The following new members were elected by the meeting:—Messrs. Frank Curtis, Branislav Popovic, Chas. W. Boyes, F. C. Jackson, Misses Frances Forster, Tui Coto, Cath. Howden.

Mr. P. F. Morris gave an interesting and informative talk on Australian fish, rays and crustaceans, illustrated by many slides.

Guides are needed for parties of school children visiting the Badger Creek Sanctuary, leaving Melbourne by train at 8.30 and returning by 4 p.m. Lunch would be provided for all guides. Those able to help are asked to give their names to the Secretary.

The President asked exhibitors to hand in written notes giving anything of special interest about their exhibit, and giving its full common and scientific name, and their own full name.

EDITORIAL

In presenting this issue of the *Victorian Naturalist,* primarily devoted to a survey of the lyrebird, the Council gratefully acknowledges the grant made by the Trustees of the M. A. Ingram Trust, without which its production would not have been possible.

The full life history of the lyrebird has been covered in detail in earlier issues (*Vict. Nat.,* Vol. LVII Nos. 10, 11; Vol. LIII No. 1) It was felt that a general review of the present status of the bird in each State in which it occures, and particularly how it had survived the disastrous bush fires of recent years, would be of value at this time. The description of how a few were caught and transported to Tasmania and their subsequent history, is a particularly interesting story of an experiment made in the effort to preserve this unique species.

The Council is grateful to the authors who generously responded to their request for contributions with articles and photographs.

The notes by the late Tom Tregellas are from an unpublished manuscript in the possession of the Editor.

CLASSIFICATION OF THE LYREBIRD

By W. B. HITCHCOCK, National Museum, Melbourne

The affinities of the lyrebirds with other members of the large Order Passeres were reasonably well established as long ago as 1876 by A. H. Garrod (*P.Z.S.* London, pp. 506-519), who published a series of brilliant papers on Passerine anatomy, with particular reference to the structure and muscles of the trachea (windpipe) and the syrinx (voice-box).

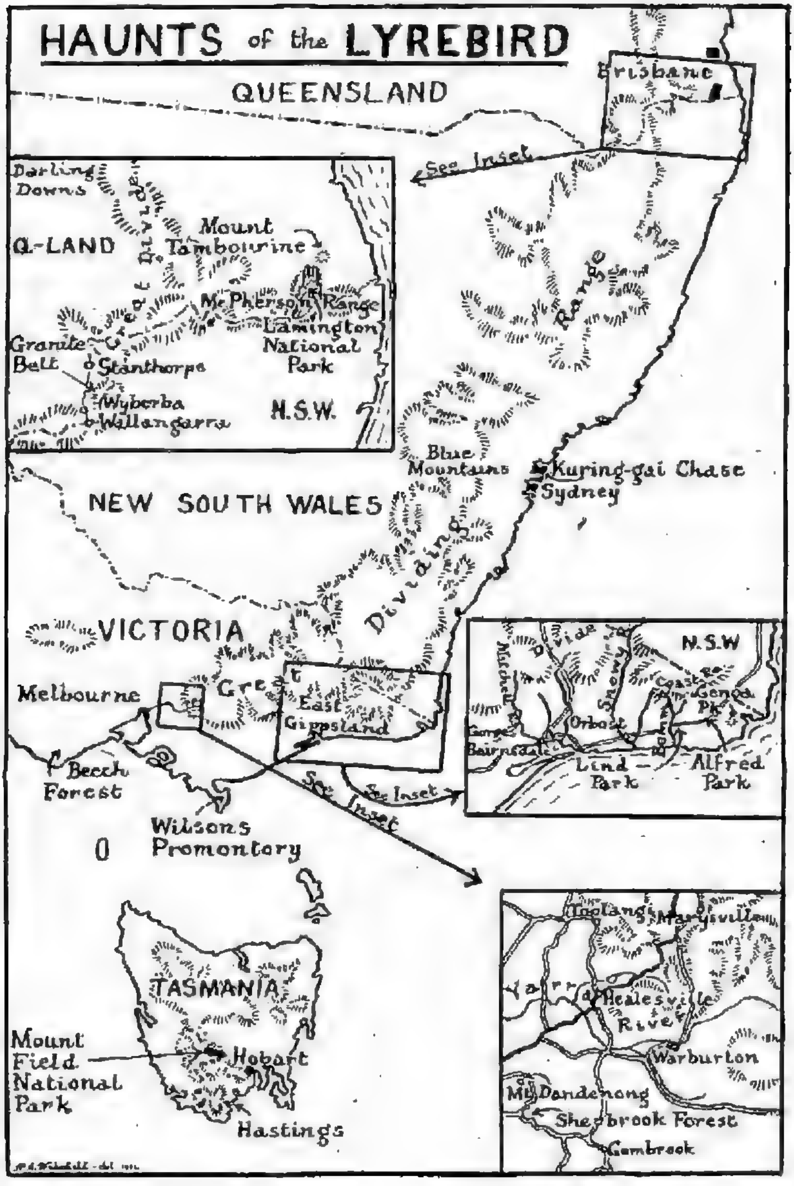
Garrod (*ibid*, p. 507) suggested the terms *Acromyodi* and *Mesomyodi* to distinguish the two major groups of song birds. In the former, which includes all the "normal" or "oscinine" Passeres, as well as the "abnormal" lyrebirds and scrub-birds, the intrinsic muscles of the voice-organ are attached to both end of the bronchial semi-rings; in the latter, which includes such groups as the broadbills, oven-birds, pittas, manakins and cotingas, the muscles are attached to one of the ends or to the middle of the bronchial rings. This broad classification, with slight modifications, is accepted by modern taxonomists (e.g. Mayr and Amadon, *Amer. Mus. Nov.*, 1951, no. 1496).

The two species of lyrebirds, together with the two scrub-birds, therefore comprise the Suborder Menurae within the Order Passeres. Their principal anatomical distinction lies in the possession of but two or thee pairs of syrinx muscles, as compared with five to seven pairs in "normal" Acromyodian Passeres. This may be taken as indicative of their primitive nature

Turning now to more obvious external features, the lyrebird is unique in having 16 tail feathers, and the form of these is quite remarkable—at least in the adult male Superb Lyrebird. The two outermost feathers have a broad inner web and a very narrow outer web, and their combined shape is suggestive of a lyre. The inner web, apparently, is notched at regular intervals by spaces that, according to the angle at which they are viewed, seem to be black or transparent. This effect is actually due to the barbs at those spaces being devoid of barbules. The middle pair of rectrices is likewise unusual. These have no outer web and the inner web very narrow; near their base they cross each other and then diverge, bending round forwards near their tip. The remaining 12 feathers, except near the base, have few barbs and appear hair-like. All the rectrices have very strong shafts.

Indicative of its terrestrial habits, the lyrebird has very strong legs and feet, with long, nearly straight claws. Correlated with these are the strongly ossified tendons of the legs.

The present distribution of the Superb Lyrebird is a limited one—geographically and ecologically. It ranges from Stanthorpe in southern Queensland, through New South Wales (east of the Divide) to the Dandenong Ranges in Victoria. Typically, it is a bird of the fern gullies, but it occurs sparingly on the outskirts of such habitats wherever the environment is suitable.


HAUNTS of the LYREBIRD
QUEENSLAND
Brisbane
See Inset
Darling Downs
Q.-LAND
Great Divide
Mount Tambourine
McPherson Range
Lamington National Park
Granite Belt
Stanthorpe
Wyberba
Wallangarra
N.S.W.
Range
Blue Mountains
Kuring-gai Chase
Sydney
NEW SOUTH WALES
Dividing
VICTORIA
Great
Melbourne
East Gippsland
Beech Forest
See Inset
See Inset
Wilsons Promontory
Divide
N.S.W.
Mitchell R.
Snowy R.
Coast
Genoa Pk.
Gorge
Bairnsdale
Orbost
Lind Park
Alfred Park
TASMANIA
Mount Field National Park
Hobart
Hastings
Toolangi
Marysville
Yarra River
Healesville
Warburton
Mt Dandenong
Sherbrook Forest
Gembrook

SOME RANDOM NOTES ON LYREBIRDS

By R. T. Littlejohns

It is natural, perhaps, that any notes I am able to contribute regarding the lyrebird, whilst covering a period of twenty-seven years, will yet be in general terms and will lack many scientific details which, in such a period should have become available. The truth is that I have been concerned, mainly, with publicising the accomplishments of the species and have studied deeply only such aspects of lyrebird character and behaviour as have been likely to be of assistance in various forms of photography and in sound recording.

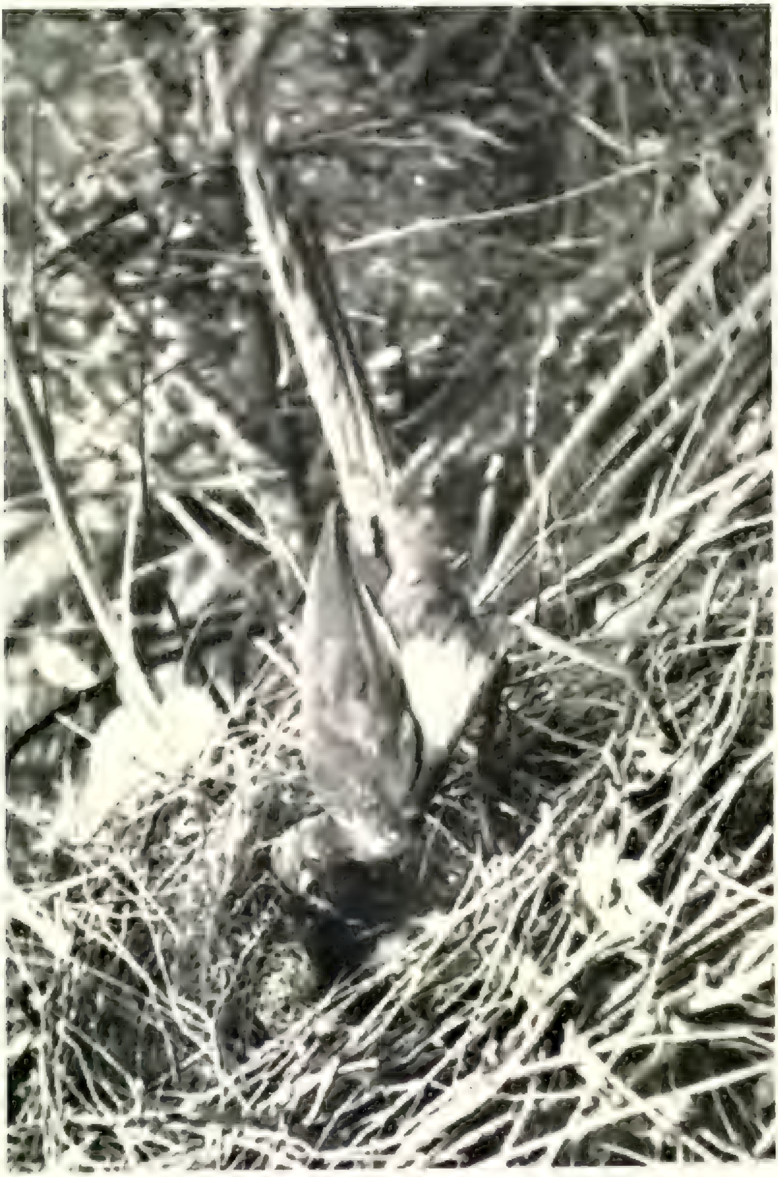
The most important matter for consideration, it appears to me, is the present numerical status of the species throughout its limited range. This aspect is of particular interest to anyone who remembers that in the early twenties the lyrebird, and. in fact, the koala and the platypus as well, had reached a dangerous state where extermination easily could have followed. Such an unsatisfactory position undoubtedly arose from the lack of appreciation by Australians of their remarkable fauna. In that era it was fashionable to destroy any wild creature, and the merit of the achievement was in direct proportion to the rarity of the victim.

It is the more pleasant, therefore, to be able now to voice the opinion that the lyrebird, at any rate, is safe for an indefinite number of future years. There can be no doubt of the reason for the change. The more or less natural hazards to lyrebird survival have actually increased because more forests have been cleared, forest fires have been more frequent and foxes more numerous; but man himself, as the principal danger, has been converted. The lyrebird is now protected by public sentiment much more effectively than would be possible by drastic laws alone.

These facts bear on the first point I wish to make. The awakening of public interest was neither accidental nor immediate. It was the result of many years of pioneering work by Tom Tregellas. He lived amongst lyrebirds for weeks at a time, he studied their habits and he photographed them. He used the meagre facilities then available to spread the knowledge he had gained and he embarked on a one-man crusade to arrest the drift towards the extinction of such an important natural possession. Let us make no error as to the underlying reason for the present satisfactory status of lyrebirds, and let us realize how much greater were the difficulties, thirty years ago, of studying and photographing the species. No statement on this subject could be complete without inclusion of a tribute to the work of Tom Tregellas.

Lyrebirds at Sherbrooke, twenty-five miles from Melbourne, have received more public attention perhaps than those of any other area, and the increased interest in the species throughout the

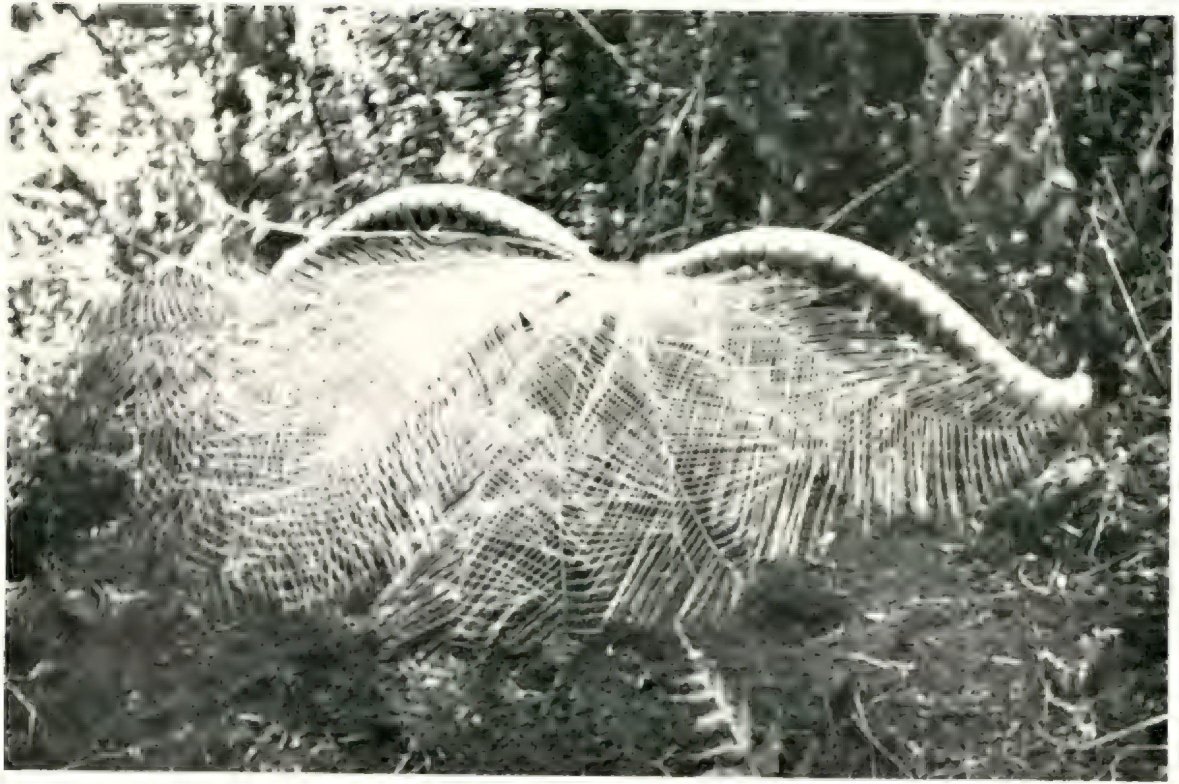
PLATE II



Female Lyrebird Feeding Young in Nest

Photo: R. T. Littlejohns

Plate III



Male lyrebird in full display on mound.

Photo: R. T. Littlejohns.

remainder of its range has resulted, to some extent at any rate, from the popularity of the Sherbrooke birds. In this area, thirty years ago, tourists climbed the slippery path to "The Falls" without becoming conscious of the fact that the forest rang with the finest bird-song to be heard in Australia. It meant nothing to the tourist, and it is doubtful whether one in fifty even "heard" the song. No one cared that, for a period of years, scarcely a young lyrebird was reared in the Sherbrooke area because of various human agencies. At the same time lyrebirds had no reason to trust humans and it was extremely difficult to obtain more than a fleeting glimpse of them.

Now the position is entirely different. Almost every visitor to the forest is there for the expressed purpose of seeing and hearing lyrebirds and, on the other hand, lyrebirds have become accustomed to the presence of humans. Because no harm has come to them as a result of such association, they are now approachable to an extent that would not have been considered possible in the light of experience of thirty years ago. The effect of publicity and of public interest, therefore, has been twofold. As humans have become more deeply appreciative of lyrebirds, the latter have become progressively more trustful of humans. In areas where humans are seldom seen, lyrebirds maintain their natural distrust of them.

This natural distrust would appear to be broken down so far as the female lyrebird is concerned while she is attending to a chick in the nest. At this time she will proceed with the feeding of her offspring in the close presence of humans. However, at other times she is more secretive than her mate, so that her action when the chick has hatched may be credited more correctly to a strong maternal instinct rather than to supreme trustfulness. When human intruders are leaving the vicinity of a nest, the female frequently will follow them in a manner generally regarded by the intruders as indicating extreme friendliness. Personally I do not believe that this widely practised habit is based on any desire at all to be close to humans.

It is not realized generally that the female lyrebird is a capable songster. Usually, but not always, her singing is more subdued than that of her mate, but much of her mimicry is, I think, more faithful. One female lyrebird at Sherbrooke earned for herself the title of "the singing hen." Her song was of such volume often that, from a distance, one credited it to a male. This bird also performed the characteristic "dance" with the tail reversed and depressed over her head. It must be conceded, however, that the female of the species is not a regular songster, probably because of the claims on her leisure made by the unaided tasks of nest-building, incubation of the egg and feeding of the chick.

Because the male lyrebird provides most of the spectacular sights and sounds calculated to spread the fame of the species, it follows that most of the photographic efforts of the last twenty-seven years have been devoted to him. As other observers have dealt fairly fully with the display and the song, it remains but to touch upon a few points which have impressed me.

Within the strictly limited powers of reasoning which I consider animals possess, the lyrebird must be credited with more than usual intelligence. Each individual is somewhat of a "personality," with characteristics and habits which identify him amongst his fellows. This is probably the reason why observers are tempted to bestow pet names on individuals. Personally I consider that pet names are unsuited to genuinely wild creatures. Nor am I able to agree with the opinion often seriously expressed that male lyrebirds dance or sing "because" there is a human audience. My view is that they perform "in spite of" the audience. The singing and mimicry make a really finished performance and one may be pardoned for believing, sometimes, that the singer is striving after dramatic effect. But I am unable to believe that any animal, even a lyrebird, is able to comprehend what would constitute dramatic effect in the minds of humans.

Nevertheless there *are* aspects of the performance which clearly are not accidental. The song is not entirely automatic and gives definite evidence of some degree of reasoning. Often when a male lyrebird is in full song he will break off in the middle of an item and will join in with uncanny anticipation to sing a duet, as it were, with the occupant of an adjoining territory. Similarly, the song may be interrupted while the singer mingles imitated notes of Crimson Rosellas with those of a flock of these birds which may fly overhead. In neither case can it be argued that the instinct of self-preservation is involved and that the action is therefore automatic. The singer had to "think" about his song.

There is further evidence of superior intelligence when comparison is made with other species. Several small birds, including the Mistletoe Bird, have been found to be governed to a ridiculous extent by habit. A Mistletoe Bird which had become accustomed to feed its young whilst the latter were held in a human hand, continued to fly on to the hand and to blissfully deposit food therein on several occasions when the hand held no chick. Experiments along similar lines carried out at the nests of lyrebirds have produced no such evidence of low mentality.

Perhaps this superior intelligence has been responsible for the survival of many of the lyrebirds in the Sherbrooke area. The best-known and most photographed male bird there has occupied, for seventeen years to my knowledge, a territory at the forest edge where there have always been foxes. He has escaped this hazard in spite of the fact that, with regard to humans, his natural distrust has disappeared. In the cases of less intelligent species a relaxation of alertness with regard to humans often results in a fatal lack of alertness in respect of cats or other enemies.

If any conclusions may be suggested by these fragmentary notes they are:

That, as a result of a belated awakening of public sentiment, lyrebirds have emerged from any danger of extinction which can be forseen.

That credit for this state of affairs is due to Tom Tregellas.

That, whilst the lyrebird is credited often with capabilities which it does not possess, it is still, within the natural limitations to which animals are subject, a creature of a very high order of intelligence.

ROOSTING

It is an interesting operation, this going to roost in the tree-tops. Though I have watched them scores of times at camp, there always seems a strange fascination about the manner of their going up in the fading light and I never tire of watching the ascent and listening to the accompanying remarks. The lyrebird is a poor flyer but a good jumper, and when he wishes to reach the tree-tops he combines one with the other with the happiest results. Uttering a preliminary and carrying call, he gives a mighty jump and flap and reaches the first limb. Pausing a moment, he repeats the operation and crosses to the other side of the tree to a higher limb, then on again till he reaches the top. He does not always roost in the blackwoods, though many of them are 80 feet in height, but volplanes across to a mountain ash and repeats the operation till he is at last anything up to 150 feet from the ground.

When he is satisfied with his altitude he performs his toilet, pausing now and then to send out a parting salute to the dying day and at last settling down for the night. It has always been a marvel to me why the bird chooses such small twigs on which to roost One would think a bird so weighty would choose a strong lateral limb on which to rest, but very often he goes right out to the end of the twigs where even a honeyeater would scarce venture and seems quite contented. Here is where the powerful claws stand him in good stead, as I have never known a bird to blow down at night, though convinced they spend many sleepless hours.

The birds frequently call at night time, and at first dawn come down to a lower perch and make further remarks, then jump down and begin feeding. As a rule they only partake of a light breakfast before displaying and calling on the mound, seeming to find it a matter of impossibility to pass a mound without giving vent to their feelings.

—the late TOM TREGELLAS.

THE LYREBIRD IN TASMANIA

By MICHAEL SHARLAND

In recent years Tasmanian bird observers have been able to enjoy the novelty of hearing the voice of the lyrebird in the forests of their chief national park, and, at times, to watch the bird itself, for a number were introduced and liberated there between 1934 and 1949, and a few have become established.

In the period mentioned 22 birds were obtained from Victoria. One of these died en route, another died on being released, the remains of a third were found in the park where it had evidently been killed by a Tiger Cat. Five birds were released in an area of thick forest at Hastings Caves, approximately 60 miles south of Hobart, but all the others were liberated in the Mt. Field National Park, some 50 miles west of Hobart.

The object of introducing the species to Tasmania was stated by the sponsors to be to remove it from the danger of extinction by the fox, which was regarded as its special enemy in the eastern States of the Australian mainland, the fox being unknown in Tasmania. It was doubtless a worthy object, regardless of whether the bird was ever in danger of extinction in its own environment, and, in fact, it commanded considerable support from organisations and individuals interested in bird conservation. The Royal Australasian Ornithologists' Union paid for at least five birds from a special grant of £50 which had been made by an anonymous donor in 1926, and the remainder were either purchased by the Tasmanian Government or generously donated by Mr. T. S. Nettlefold.

Although there is evidence that some of the birds are living still, there has been no systematic attempt to prove where acclimatisation has been successful or otherwise. There are various reasons for this. The extreme density of the forest areas where the birds were liberated and the difficult nature of the terrain, combined with the comparative remoteness of the localities known to be inhabited, have rather discouraged observation and search by all except those experienced in bush walking; and the number of keen observers is few. Consequently reports are scarce and not altogether reliable, and it is not possible at the present stage to determine whether any of the birds have managed to breed and rear their young.

In June, 1945, the author found three used nests in a dense fern gully in the national park about a mile from the point where birds were liberated a few years before. One of these nests, situated on the base of a fern, contained an egg which, however, crumbled to the touch and was found to be quite dried and empty. The other nests were old and may have been used in previous seasons. The ground was liberally marked with fresh scratchings over a wide area where scrub had been burnt, indicating that one or a pair still inhabited the area.

In June, 1946, the author, visiting the same locality, found the foundation of a nest, but subsequent visits showed that the building was not proceeded with.

The evidence of nest building is confined to the foregoing observations, and although further visits have been made to this area and elsewhere in the park, and many scratchings located, no indication of breeding has come to light.

Curiously enough, none of the five birds liberated in the Hastings Caves area has since been seen. No experienced observers, of course, have visited this district, and it is possible that an investigation would prove that some birds were there still. Guides living on the spot, and casual visitors, have been asked to keep a lookout for them, but as yet no records have come to hand. The forest there is dense and usually very moist, and would seem to be suited to the habits of the bird.

All that can be said at present is that of the 19 birds introduced, three pairs have become established in and adjacent to the Mt. Field National Park. One of these has its territory well within the park, in Beech forest between the five and six mile posts on the roadway leading from the park entrance to the highlands of Mt. Field. Another pair has selected territory near Crisp's hut, on the Adamsfield track, along the southern boundary of the park; and the third pair is at Risby's Basin, about five miles south of the park.

Persistent reports seem to indicate that another pair is located near a sawmill concession close to Fitzgerald, outside the eastern boundary of the park; but there is no evidence at all to show that this or any of the other known pairs is breeding in the localities mentioned.

The local branch of the R.A.O.U. intends to carry out a comprehensive search of the inhabited areas in order to determine if the bird is nesting successfully. Ignorance by bushmen and others of the habits of the bird, as well as unfamiliarity with call notes and type of nest, are factors which may account for the lack of positive reports regarding range and breeding.

These persons have hitherto not known what to look for, what to expect to see or hear, nor have they always recognized evidence when it was available. For example, on the visit to the park when the nest with addled egg was found in 1945, the author was accompanied by two bushmen and a police trooper, all claiming some knowledge of birds. In single file they followed down a narrow wallaby pad through thick fern scrub, with the author in the rear. The three in turn actually brushed the side of the nest to pass between two fern stems and failed to recognize it for what it was, and it remained for the author behind to locate it and demonstrate how easily its presence could have been overlooked.

TRANSFERRING LYREBIRDS TO TASMANIAN FORESTS

By David Fleay, West Burleigh, Queensland.

At various times between 1940 and 1950 I have, at the request of the Victorian Fisheries and Game Department, undertaken the delicate and exacting task of capturing lyrebirds and bringing out selected individuals unharmed from their mountain fastnesses for quick transport by air to Tasmania.

Such moves, involving careful planning, good co-ordination and the minimum of delay in transit have followed governmental approval of applications from the southern State where conditions are ideal, but the species does not occur naturally.

It is gratifying to learn from periodical reports that our feathered proteges have not only settled naturally into happy lives, but are nesting successfully in this fox-free State. It seems only a pity that all did not go to the one National Park area so strengthening the hold of a new species in a new habitat. Should the transference of lyrebirds within the State of Victoria ever be contemplated again it is to be hoped that none go to the rather unsuitable Wilson's Promontory, but rather, as Mr. Fred Lewis has suggested, to the Beech Forest between Apollo Bay and Princetown, where there is good lyrebird country.

Locations for the search and snaring of our splendid bush minstrels for Tasmania varied from the Toolangi-Blacks' Spur country through to Warburton (Victoria), and weeks at a time were spent wandering and working in the scented and impressive environment that is theirs in the mountain gullies beneath towering Mountain Ash giants. Periods when the birds were occupied with eggs or young were avoided for obvious reasons. While lyrebirds are widely distributed over this Toolangi-Warburton section, it is not always possible to find a sufficient concentration of them to snare successfully. The great fires of 1939 incinerated even the food-nourishing humus in thousands of gullies, and it is to favoured areas spared that holocaust that one must turn.

To describe each and every expedition involved being out of the question, this is an account of proceedings with one particular pair of birds secured in the November-December period of 1949, when Sir Thomas Nettlefold defrayed costs of the undertaking. Stacked with gear, our old car eventually left good roads twenty-five miles from our home at Badger Creek and ascended an old and bumpy timber-track winding ever upward as it skirted granitic mountain shoulders and crossed corduroyed shady creeks resonant with the "tink-tink" of many bell-birds. We came to rest on the site of a hut long since demolished by fire, but marked by the rusty iron, broken china, etc., inseparable from such ruins.

Camp was established beside a clear creek, and already from the slopes above came a faint familiar and ringing "Quolp-quolp!" Up there a cock lyrebird had paused in his industrious raking of the forest floor and the bush resounded with his repeated challenging notes." With equipment slung on backs and fern hook and hatchet in hand, we began the plod, slash and push through the scrub to cut a track up the mountain side.

All was quiet among the aisles of tall smooth trunks until very suddenly again, and from a hidden gully ahead, came the "Quolp-quolp!" or "Blick-blick!" of that same cock bird. Louder and clearer now the bird added a short session of "recorded music," the laughter of kookaburras, the "Guinea-a-week" of the pilot bird, the sharp crack of the whip bird, the shriek of swift-flying crimson parrots, the cry of the wedgetail eagle and the favourite rich melody of the grey thrush.

Quietly we began a descent towards the broadcaster's position, the aromatic scents of the gully coming up to meet us, but slipping and sliding were unavoidable and the lyrebird has keen hearing. A piercing "zing!" of alarm and the concert was heard no more. The treeferns closed in, but there were dim and cool cloister-like passageways between their rough trunks. There was chaos where starkly bleached trunks had fallen at confused angles, relics of giants dead for many years. Obviously the vicinity was a good place for snares for the whole forest floor was newly scratched over, the rich yielding earth freshly exposed, and at the gully bottom there were narrow passes between logs, and an assortment of strategic positions. On the additional evidence of moulted feathers, quite a few lyrebirds seemed to be in the habit of visiting this gully, and almost certainly a proportion of them would be youngsters ranging perhaps from some four months to two or three years of age. The difficult terrain of the lyrebird gully, and the "just-so" exactitude of building snares so that the bird is merely tethered and uninjured in any way, takes an uncommonly long time so that, working until dark we rigged only twelve that day. Small fry such as the cheeky Yellow Robin delighted in our activities and they darted constantly about one's hands picking up exposed Tallitris hoppers, wire worms and other delicacies.

That night we camped at the car beside a gurgling stream with a Boobook Owl "mopoking" pleasantly and restfully. Our only visitor was a big, woolly-furred mountain possum which trumpeted its distrust of the flickering firelight and the intruders from a nearby eucalypt. An early morning round of the snares revealed a totally untouched state of affairs, the birds were suspicious and had not even disturbed the debris round about.

On the third morning things had begun to happen. From the evidence of torn-up earth and barked sapling butt at No. 1 snare a lumbering wombat must have strayed in during the night and been put to some slight inconvenience before passing on. But as we rounded a gigantic log and came in sight of No. 3 snare a guttural squalling and screeching assailed our ears and a chocolate-brown bird flapped and jumped there. It was a fat and obviously newly-caught hen lyrebird. It is vital to be close at hand when such birds are captured, for their penetrating screeches are liable to bring foxes on the run. Two other snares had been set off and were ruined by the struggles and strong teeth of short-eared possums. Odd patches of fur identified our night callers.

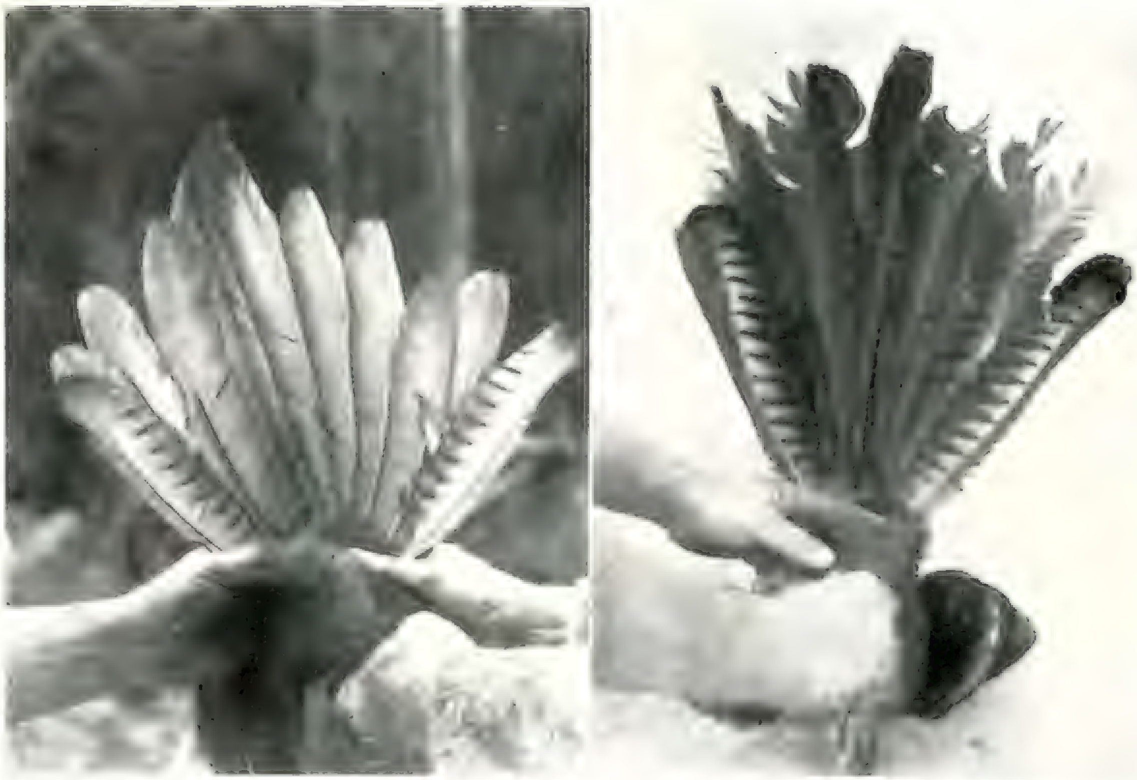
Resetting and putting the snare-line in order preceded a return to camp, where the captured lyrebird was fastened in a roomy grass-padded tea chest. We then drove her home to Healesville, releasing her temporarily in a semi-dark shed with a generous helping of termites. Next morning we were back in the mountains and scrambling through the treefern trunks as a plane roared southward across Bass Strait carrying Mrs. Lyrebird for immediate liberation that day in the National Park 40 miles north-west of Hobart, and 400 miles from the scene of her capture.

Not every day produced a catch in this type of hunting, and the sun rose and set several times without giving us more than a fine mountain possum which so entangled its noosed paw in a *Prostanthera* bush that it had no chance to chew off the snare and could only sit blinking at us in morning sunlight Then came a period of low clouds while trails of vapour hung across the hills. The ferny underscrub was fog-wet and mist-drenched so that clothes were continually soaked. Rain and a hailstorm clogged all snares, and they had to be reset time after time. On these days of dampness and discouragement we heard, as if in mockery, the swelling, challenging melody of lyrebirds from many points of the compass. Alone one afternoon while crossing a saddle into the head of an opposite gully, and guided by a voluminous outpouring of "blick-blicks!" and bursts of song, I watched unobserved for five minutes while a beautiful full-tailed cock bird sang from a perch on a fallen tree. Around him, preening themselves on adjacent limbs, were no less than five plain-tailed birds—how many of these were hens and how many immature males it was of course impossible to tell without standing right among them.

A second hen lyrebird captured near the entrance to a wombat burrow was released forthwith, however, for as soon as she ceased squalling, the pathetic cheeps of a well-grown fledgling revealed her as a mother with young "at foot."

Knowing by now the actual territory roamed by the cock lyrebird heard on the day of arrival, and having glimpsed him once when in an incautious moment he chased an immature bird out of his gully past me, the quest boiled down to a matching of wits. Except in certain tourist areas, such as Sherbrooke, where a few birds are semi-tame, the forest lyrebird is most elusive and self-effacing. Time and again our quarry scratched quantities of debris and soil over snares. One morning, however, a whole week after the initial work in the gully and whilst alone on the job, I heard danger calls of "Quisst"! faint and far away, but in the direction of the male's favourite feeding grounds. Seconds later a tremen-

PLATE IV



Left.—Underside of mature lyrebird's tail for comparison with that of young male lyrebird. Outer lyrate feathers not clearly indented by "windows."
Right.—Underside of tail of first year immature male bird. "Windows" almost reach shaft of feathers.

Photos: David Fleay.

PLATE V

'He was a simply perfect specimen . . . I was in time to prevent damage to one single feather of the mature [illegible] magnificent tail.'

Photo: [illegible]

dous squalling and scolding summoned me to a breathless climb and scramble into the gully. Sure enough, the big lyrebird was tethered to a quivering dancing snare-pole. What a glorious, lustrous-eyed bird he was! My arrival was in time to prevent damage to a single feather of the sixteen in his new season's—and even then just over two foot—tail. He was a simply perfect specimen of the mature lyrebird, and his fresh tail was a symmetrical shimmering delight. On being handled he reacted as lyrebirds do, not pecking with his beak, but seizing one's hands in a powerful foot clutch that is quite painful and tenacious, much in the manner of a hawk or eagle, except that here the claws are not sharp and pointed. By way of interest his weight proved to be 2lb. 12½oz. With great care for his wonderful tail—so easily broken in the struggles of these strong-legged birds—I carried him down gully and across the ridges to camp. As usual I felt somewhat conscience stricken about taking such a prince of songsters away from his haunts, but in a dark and well ventilated tea-chest he sat quietly and philosophically while the car jerked and bounced on its journey through the bush to the low country. Once again, early the following morning, an Australian National Airways DC3 winged across the sea to the southern island State. By early afternoon this fine bird had scampered into dense scrub in the National Park, practically identical with his own, and with the operation completed the total of lyrebirds flown across Bass Strait rose that day to eleven pairs.

For the appended list of birds and dates I am indebted to Mr. A. D. Butcher, Director of the Fisheries and Game Department. Those secured and forwarded between 28/8/1934 and 26/8/1938 were, I understand, the result of operations by Mr. Howe.

From 5/11/1941 to 7/12/1949 birds snared and delivered to the Melbourne end were largely combined efforts on the part of myself and the late Roy Alderson, bushman par excellence, and good companion on the Tasmanian Thylacine search of 1945-46.

DETAILS OF LYREBIRDS SENT TO TASMANIA

28/8/34	1 ♂ 1 ♀	By air to National Park on 29/8/34. Tasmania reports ♂ bird found dead on 29/8/34. ♀ believed well.
14/8/35	1 ♂	Forwarded by air and kept in a special pen. Died 22/8/35.
23/8/35	1 ♂	By air. Liberated National Park.
3/9/35	1 ♂ 2 ♀	By air 3/9/35. Liberated National Park.
26/8/38	2 pairs	by air 26/8/38. Liberated National Park.
5/11/41	1 ♂ 2 ♀	By air 5/11/41. Liberated National Park.
26/1/45	1 pair.	By air. Liberated Hastings, 27/1/45.
28/5/45	2 ♂ 1 ♀	By air. Liberated Hastings, 29/5/45.
30/5/45	1 ♀	By air. Liberated Hastings, 30/5/45.
30/11/49	1 ♀	By air. Liberated National Park
7/12/49	1 ♂	By air 8/12/49. Liberated National Park.
	Total	11 males 11 females.

Nine males and eleven females believed to have become established.

LYREBIRD REFLECTIONS FROM NEW SOUTH WALES

By A. H. Chisholm, Sydney

Much destruction was caused by fires in heathlands and forests near Sydney during the summer of 1951-52. It is difficult to estimate the extent to which birds suffered, but we fear that small and weak-winged species, such as the pretty variegated wren, the elfin emu-wren, and the talented heath-wren, were grievously affected.

We had thought, too, that in some areas that were badly stricken, such as the National Park immediately south of the city, the various fires might have reduced the ranks of lyrebirds. Accordingly it was refreshing to learn from one of the National Park rangers at Easter that he had seen from time to time during recent weeks quite a number of the stately birds strolling or running about near the Carrington Drive—that was, of course, at periods when traffic on the roadway was light.

"No," the ranger said, "I don't think that the fires in the park, bad as they were, affected the lyrebirds to any extent. Those birds that were in the stricken areas probably escaped into the bases of the gullies or into the heavier vegetation along the river, and I suppose they have since adjusted themselves to new spots. You ought to be able to see or hear a few this afternoon."

That prediction was borne out. I did in fact hear a couple of male bird singing fitfully, and although the day was Easter Sunday and motor traffic was heavy, I saw a lady lyrebird feeding complacently within a few yards of the Carrington Drive.

All this, coupled with reports from the Blue Mountains, Kuring-gai Chase, and other relevant areas, seems to indicate that the lyrebirds of the Sydney district have survived, to a refreshing degree, the worst fires of many years. It is a situation that tallies with the one that arose after the dreadful forest fires that occurred in Gippsland early in 1939. We had feared at the time that lyrebirds must have been exterminated in many areas, but soon afterwards reassuring reports began to arrive—the birds were observed in various places that had been almost wholly decimated, and in some spots they were seen feeding over burnt ground.

Fires aside, it is really remarkable that lyrebirds have contrived to maintain their numbers to an extent which, if not wholly satisfactory, is at least sounder than Australians had any right to expect.

These regal birds have been known to the white man for 155 years, and in that time they have suffered a sad battering. First discovered (by a convict-bushman named James Wilson) in 1797, the species was made known in the following year to Governor Hunter, who dubbed it "the New South Wales bird of paradise" and promptly sent a specimen to Lady Mary Howe, daughter of the First Lord of the Admiralty—the fighting sailor after whom Lord

Howe Island was named. That specimen caught the eye of a soldier, Major-General Thomas Davies, and he, in an address to the Linnean Society of London in 1800, described the bird in detail and bestowed upon it the appropriate name of *Menura superba*.

Additional specimens were sent to London from 1799 onward, and in the following years settlers began to exploit the bird for its beautiful tail feathers. As early as 1824 the French explorer Lesson declared that the species was becoming rare through being "persistently hunted," and in 1834 Dr. George Bennett also commented on the slaughter, adding that the price of tail feathers had increased from 20/- to 30/- a pair. Vandalism of the kind persisted along the years into the present century. As late as 1912 it was stated at a congress of the R.A.O.U., that in the previous year two Sydney dealers alone had been known to dispose of 1298 tails of lyrebirds.

When facts and figures such as these are considered, and when it is remembered that foxes have also joined in the slaughter, that much "pheasant country" has been cleared, and that the rate of reproduction is slow (each female laying only one egg a year), we begin to realize that it is somewhat astonishing that any of the birds at all still exist.

The pleasing fact, however, is that lyrebirds sometimes visit gardens in certain outer suburbs of Sydney, and that nests may still be found in sandstone gullies within easy distance of the city. The males, it is true, are not by any means so accessible, nor so tolerant, as those of Sherbrooke Forest near Melbourne, but it is possible to watch them displaying in favoured areas such as the National Park. (See K. A. Hindwood's illuminating notes in the *Vict. Nat.* of Feb.-March, 1941, and my own notes in the issue of May 1936, for observations on the birds' habits near Sydney.)

On the whole it seems probable that, given strict enforcement of the protection they now enjoy, through legal enactments and the force of public opinion, Superb Lyrebirds will continue to survive, and perhaps increase, in their coastal and near-coastal fastnesses, from Sherbrooke Forest to the north-east of N.S.W., during many years to come. Doubtless, too, the Superb bird's Queensland representative—the one which inhabits the Stanthorpe district, possibly extending as far north as Mount Mistake, and which I named in 1921 Prince Edward's Lyrebird—will persist indefinitely in its self-contained "city" of granite.

Confidence may not be so strong, perhaps, regarding the welfare of the smaller and less decorative species, Prince Albert's Lyrebird, which is restricted to a relatively small area of sub-tropical jungle. The portion of north-eastern N.S.W., where this bird was first discovered about 1849, has long since been cleared in the interests of dairying. So have numbers of other once-favoured spots.

Nevertheless there still remain various areas of rain-forest in which the Albert Lyrebird renders its brilliant concerts, and in particular there is that choice sanctuary, the National Park of the McPherson Range.

LYREBIRD NOTES FROM EAST GIPPSLAND

By N. A. Wakefield

With most Victorian naturalists, reference to the lyrebird at once brings to mind thoughts of the Dandenong Ranges, and particularly of Sherbrook Forest, for this is within easy range of our capital city of Melbourne. There the lyrebird population is comparatively sparse, however, and one must go further east to see it in true abundance. Probably it is nowhere more plentiful than in the treefern country of the Coast Range in East Gippsland.

About the watersheds of the larger streams east of the Snowy, but particularly that of the Bemm River, there are many hundreds of square miles of country where the Soft Treefern predominates. Everywhere there are signs of a dense lyrebird population. One may see scores of the birds during a day's walk, and find perhaps a dozen of their great nests; and at any time there may be a number of birds simultaneously giving voice to their mimicry from several points of the compass.

Further south, in the lower country east of Orbost, the lyrebird is almost as plentiful. When one drives along the Princes Highway in the early morning, it is the rule, rather than the exception, to see one or two of the birds crossing the road. This is the case particularly in the vicinity of Lind National Park (Euchre Creek) and Alfred National Park (Mount Drummer).

In the northern part of the district too, right into the Alps, the Menura persists in numbers. It forages in the Alpine ash groves and nests on the rock ledges of the Great Dividing Range at between four and five thousand feet elevation.

Back in the 1870's the explorer-naturalist, Alfred Howitt, left a record of lyrebirds in the sandstone gorges of the Mitchell River. With two black guides he was making his way up the chasm of Deadcock Creek when they came upon two of the birds. One blackfellow narrowly missed one with a rock; and the other was stopped in the act of throwing his master's tomahawk at them among the rocks. He could not understand the white man preferring a new tomahawk to a dead bird.

It was in the same area that my father had an interesting experience some forty years ago. While climbing along a difficult cliff-face he became aware of a lyrebird's nest on a rock ledge when the youngster in occupation gave voice to the usual ear-splitting screech. Thereupon the mother bird appeared, and noting the climber's disadvantage, set to work to drive him away. He recounts that he had a most anxious few minutes, while she beat him with her wings before he managed to shift to a less precarious position.

On the occasion of a visit to Genoa Peak in 1939, a nest was discovered on a granitic ledge, and the large chick therein, when investigated closely, reared up—legs astride—and pushed its body to the back of the nest. This was quite normal behaviour, but it provided an exception which I have never noted elsewhere; it remained mute. An hour or so later, the test was repeated, and still it refused to give the normal call for help. So it goes down in memory as my one and only dumb lyrebird chick!

—N. A. WAKEFIELD.

MOUNDS AND "DANCING"

I never by chance, or mischance, refer to the mounds as "dancing mounds," as dancing mounds they are *not*, and never were. During all the years I have been amongst them I have never seen the birds "dance" on a mound. They merely strut about and turn around whilst giving voice to their mimicry, scratching about in a desultory manner and elevating and depressing their tails the while performing all manner of evolutions. Occasionally they give a forward jump whilst calling "pillick pillick" and take two steps backward to the first position. This particular call is very far-reaching and the one designated by the blacks as "buln buln," the name by which they knew the bird.

A more significant call resembles "chewey, chewey, chewey," accompanied by a strutting around and balancing on each leg alternately. This call is decidedly amorous. The most significant call resembles the words "pluggerah, pluggerah, pluggerah," with the first syllable in each word deeply accented. It is only used on state occasions and as a prelude to the marriage ceremony. With his beak partly buried in the friable soil of the mound, the bird spreads his tail fan-wise behind him, hard pressed to the ground, and emits a most unusual sound resembling an explosion in a stone quarry. The bird during this operation never raised his head, but he knews his lady is not far away and the performance is all for her benefit.

These are the only occasions on which the bird even approaches the so-called "dance," but it is distinctly not an action to justify that name being applied.

—the late TOM TREGELLAS.

THE LYREBIRDS IN QUEENSLAND

By George Mack (Brisbane)

Both species of lyrebirds are present in Queensland, but only in the south-east portion of the State. This is the northern limit of range of both forms.

The Albert Lyrebird (*Menura alberti*) occurs in the tropical rain-forest of the McPherson Range, including the Lamington National Park of 47,000 acres, on and near the southern border. In the early days it was plentiful in similar forest on Mt. Tamborine, about 35 miles south of Brisbane. Settlement has deprived it of much of its habitat in this area, but I have been informed that a few birds are still to be found on the slopes of the mountain.

North of Mt. Tamborine and about 60 miles south-west of Brisbane, lyrebirds have been reported on Mt. Mistake. They are likely to be *M. alberti*. Although the presence of the birds in this locality has been known over the years, it would appear that no one has yet checked on the species. However, there are good reasons to believe that it will prove to be the Albert Lyrebird.

Incidentally, it is not always realized that tropical rain-forest in Australia is patchy and restricted. Forms confined to this class of country have been much affected by settlement.

When a resident of Brisbane refers to the lyrebird, generally the species in mind is the Albert Lyrebird, which may have been heard, or even seen, in the McPherson Range, a favourite walking and holiday district. The birds are much more often heard than seen, and I have yet to know of any one having seen a display by the male.

The existence of the Superb Lyrebird (*Menura novae-hollandiae*) in Queensland would appear to be little known except to residents in the restricted area where it occurs. Originally, this magnificent bird was present in what is known as the granite country of the Main Divide between the vicinity of Stanthorpe and the southern border. Now the northern limit of its range is considerably to the south of Stanthorpe, and the possibility of maintaining the species in this State is not as good as one would wish. The fire-bug is here, and there is a particularly vicious one that always carries a box of matches in the granite belt of Queensland.

This area lies to the south-west of the McPherson Range, skirting the well-known Darling Downs. The climate is temperate, and it is here that apples and other fruits which require such a climate are grown in this State. The exposed masses and great boulders of granite are features of the district, and this rock has provided the soil in the valleys and to the west of the mass where orchards are now established.

Among the boulders and eucalypts of the high country the Superb Lyrebird (*M. novae-hollandiae*) is still found. Its habitat is now greatly restricted, apparently much more so than when Spencer Roberts (1922) wrote his accounts. Roberts was a medical man who practised in the Stanthorpe district some years ago. He was interested in birds and was readily attracted by the number of male lyrebird tail feathers he saw in the homes of his patients. With the aid of local bushmen he investigated the status of the species in the granite belt, and finally obtained specimens which A. H. Chisholm (1921) named. This is a good sub-species (*M. n. edwardi*), lighter among other characters, more greyish, than *novae-hollandiae*.

I visited the district in the winter of 1951 with other members of the Queensland Museum staff. A camp was established in the Wyberba Valley, about seven miles east of the main Stanthorpe-Wallangarra highway, beyond an area of 12,527 acres which has been declared a national park. This valley was in fair condition, and lyrebirds were heard and seen by members of the party; but since then fire has swept through the area.

In many parts of Australia settlers carelessly fire the countryside with a view to providing stock feed when rains come. No such purpose can be behind the fires which occur in the granite belt.

Although I heard the grand voice of the Superb Lyrebird on more than one occasion, I did not at any time hear a good, prolonged series of calls of the kind one comes to expect from the males of Sherbrooke Forest, Victoria. However, my visit was brief, and the open nature of the granite country is not helpful in the matter of cover.

It is already well known that the birds of the area sometimes build their nests on ledges high up on giant boulders. I was not surprised, therefore, when kindly local residents informed me that the nests were now always built in this situation because of the presence of the introduced fox. I did not point out at the time that all the foxes in Australia could not cause the birds to change their habits in this respect, or that the greatest destroyer of the species is the human being.

Subsequently three of us, one a local resident, were high up on a ridge one afternoon from which there was an excellent view of the south. I was appalled and remarked upon the burnt-out state of the country towards Wallangarra. This, I was told, was the work of a man with a box of matches. Making our way down to the valley in the late afternoon, the going as usual was difficult and we moved in single file. Suddenly the leading man stopped; in front of him was a fresh lyrebird nest built on the ground. Out shot the female, and she disappeared in a flash between two massive boulders. She had been sitting on the usual single egg enveloped in feathers. This was the only nest noted.

I should add, perhaps, that efforts have been made, and will continue to be made, by interested societies to prevent the extermination of the Superb Lyrebird in Queensland.

References

Chisholm, A. H. (1921).—A new *Menura*: Prince Edward's Lyrebird. *The Emu*, 20, pp. 221-225.

Roberts, Spencer (1922).—Prince Edward's Lyrebird at home. *The Emu*, 21, pp. 242-252.

THE YOUNG BIRD

When first hatched the young bird is sooty black, but each successive week sees it getting greyer until it leaves the nest in about six weeks. The question of leaving is determined by the position of the nest. They are found anywhere—on the ground, on stumps and rocks, between and on top of tree-ferns, in forks of sassafras, blackwood and wattle, and as much as sixty feet or higher in a mountain ash. The earliest bird in my diary left a nest on the ground at 38 days, and from the nest at 60 feet, his mother helped him down at two months.

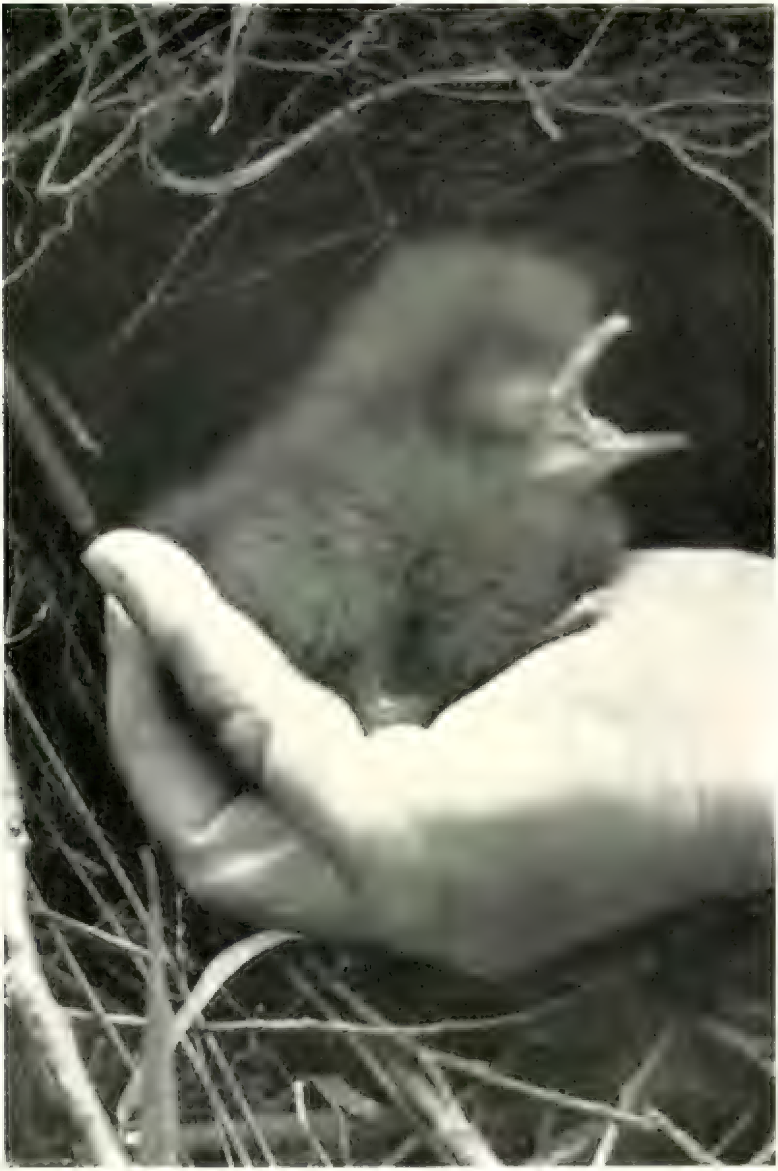
When the mother collects food for the young, she stores it in the pliant skin under the bill, and an overplus of worms often protrudes from the beak. A centipede is regarded as a tit-bit, and after being chewed all along its length to make sure of it being dead, it is laid aside until the mouth is full, then picked up and carried dangling to the nest. When returning with food the mother keeps up a continual purring note which intimates to the chick that something good is on the way, and he replies by a gentle twitter. Giving him the centipede first, she watches till it is safely down and then bestows the remainder of the food, placing her bill right down his throat and pushing it down with her tongue.

For many months after leaving the nest the young bird is attended by the mother, which at the slightest disturbance utters an admonitory call which is at once obeyed by the chick taking cover till danger passes, and again emerging when assured that all is safe. She is most assiduous in her devotion, watching him carefully to see that he does not take what is not good for him and talking incessantly in a soothing voice.

At roosting time she carefully teaches him how to ascend the blackwoods to get out of the way of marauding cats or foxes, and it is wonderful to see the agility displayed by the little fellow even at such an early age, and the use to which he puts his already long claws.

—the late Tom Tregellas.

PLATE VI



Day old Lyrebird Chick

Photo: A. G. Campbell (taken under permit, Fishers & Game Dept.).

SONG OF THE LYREBIRD

By A. G. CAMPBELL, Kilsyth, Vic.

It is well known that the lyrebird weaves the songs of other birds into a melody that makes the woodland ring, but very little has yet been done to understand the construction and technique of this remarkable performance. Even in winter, the playtime of the lyrebird, when it builds earthy mounds for its displays, the bird is ever elusive, never two days alike, full of surprises and new doings. For long periods of the day there may be no sound from the lyrebirds. Suddenly a rich voice floods the dim aisles of the forest with a riot of melody, mocking the birds of the bush with inimitable precision, from the tiniest chatter of little Thornbills, uttered with bill almost closed, to the long spring song of Grey Thrush breaking fortissimo on the pungent air. There are at least a score of wild bird calls woven into this shower of song, together with a percentage, perhaps one-fifth, which may be termed the lyrebird's own.

While there is no particular order or sequence, each call is well executed; it is the exception for one to be partly given. A prominent item is the laugh of the kookaburra, which may last several seconds. The classic item is the full song of the Grey Thrush, which lasts about five seconds. This is a charming thing. While some observers think it an improvisation, it seems to be pure rendering of one of the most delightful songs of the bush, the mating song of the Grey Thrush, heard only in early spring. The Whipbird's call is excellently reproduced, and the Pilot Bird's also. Both sometimes have the answering notes of the female bird as well. On occasions the lyrebird gives the answer only to a real Whipbird near by, or imitates exactly the notes of other birds which are being given at the time. Wild cockatoos, both Black and Gang-Gang, receive a share of attention. Two kinds of currawong, Pied and Grey, are well given. There are other sounds ascribed to the lyrebird by bushmen—notably the sound of axe, maul, cross-cut saw or bark of a dog. There is one which is said to resemble a hydraulic ram—a series of clicks or claps which bear some resemblance to this sound, but which are given at a different pace. These are signs of annoyance, heard from both male and female birds on occasions when some onlooker has interfered with the bird's wishes.

With the assistance of a stenographer, *transcripts of the songs of many lyrebirds have been made. Hundreds of calls were taken seriatim in the Dandenong Ranges. Analysis of these proved there are certain small individual variations outcropping in some localities; and again there are signs of clannishness, where adjacent

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* I was indebted to the late John Gray and to Miss Ina Watson for assistance.

male birds follow much the same series of calls. Strangely enough, there are no cuckoos or other migrant species of visiting birds among the calls of these lyrebirds. There are no night noises or calls, either of nocturnal animal or bird. Although honeyeaters, as a tribe, are plentifully distributed throughout the forest all the year round, only one lyrebird was heard to imitate any of the family.

By actual count, those calls, identified as the lyrebird's own, head the list, being just over 20% of the total. They have a variety in themselves, but attention has not yet been given to their classification. Then there are a great number of small notes of little birds, like thornbills and scrub wrens. These are over 15% on the list, bearing some relation to the number of small fry which are usually in attendance about the haunts of the lyrebird, where it is at work scratching upon the forest floor. Among others the Grey Thrush takes pride of place with 16%, the Whipbird next with 9%, and the Kookaburra very close up. Then follow in this order: parrots, cockatoos (two kinds), Pilot Bird, Yellow Robin, Golden Whistler, currawongs (two) and Butcher Bird. The only introduced bird on the list is the Blackbird, whose alarm note was sometimes given. Unidentified calls amounted to 7%. A session as a rule lasted about ten minutes. One exceptionally long recording was twenty-seven minutes—on a wet afternoon, when the bird had been pent up for some hours owing to bad weather. This, however, was a particularly fluent and brilliant performance, containing the beautiful Grey Thrush rendering no less than forty times. What makes the lyrebird's song the more remarkable is the pace of it all, besides the fact that there is never any particular order or sequence in the various calls. Some birds, more deliberate than others, averaged 5 seconds, medium ones were 3.7 seconds, fast ones, 3.2 seconds per call.

On the gramophone record available to the public, is a partial but very good representation of these powers of mimicry and song, there being about forty mimicked calls, representing eleven species of other bush birds, and twenty-one calls belonging to the lyrebird itself. The time actually taken in this reproduction averages about two and a half seconds per call. This is too fast, but serves to illustrate the extraordinary flow of singing that takes place.

All these observations go to show that we have much yet to learn regarding the voice of the lyrebird. Probably in other and more distant parts of its habitat there would be considerable changes in repertoire

A FOREIGNER'S IMPRESSIONS OF THE LYREBIRD'S SINGING

By CHARLES HARTSHORNE (University of Chicago)

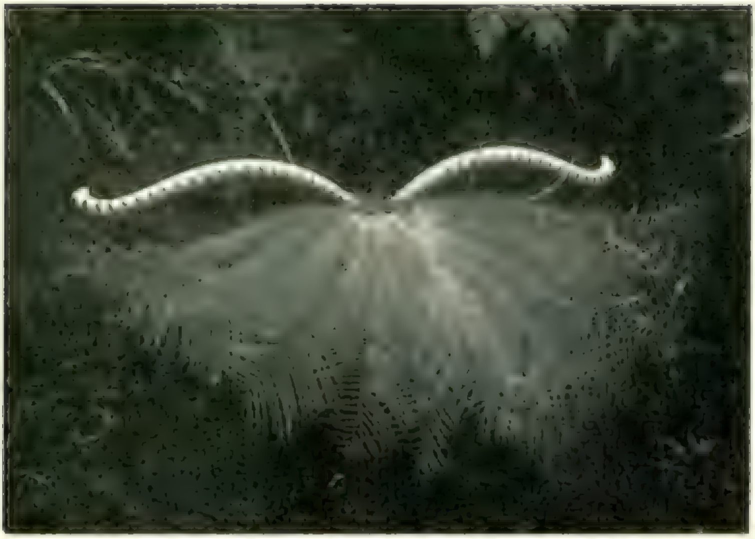
Lyrebirds have strong claims to the title, "The Most Entertaining Birds in the World." This is said, of course, with a view to their general behaviour, including the dancing, singing, mound building, and still other actions. The song itself seems to me one of the great ones. Here is almost a Shakespeare among birds, giving one everything from the clown's laughter (the Kookaburra imitation) to the delicate love song (the Pilot Bird's lyric). And yet the singing seems to me to have a more original and coherent style than our North American Mocking Bird's, which occasionally exhibits about the same versatility of imitativeness. This style is one of boldness, tingling vitality, a challenging, proud, imperious air. The song is not throughout highly beautiful, but it has great beauty here and there; it is not exactly an exquisite song, but it has frequent exquisite touches. It has been said of the nightingale that its keynote is *excitement*, that it is an operatic singer. This seems even more true of the lyrebird. The specialty of this species is dramatic contrast and stunning surprise. But there is rather more continuity to my ear, than in the Virginia Mockingbird's sequence of imitations, when that bird is in its most imitative mood. The chief means of continuity in the American singer is usually a slightly boring way of repeating most phrases, several, and even six or more, times. The lyrebird seems to be too impatient to be getting on to linger that long over any one little musical point. In this I sympathize with it.

I have compared the song favourably with two famous ones. Perhaps I should add that the Nightingale is a neater artist, and, as it were, somewhat more refined. And perhaps the Mocking Bird is on the average mellower in tone. None of the species mentioned has in high degree certain strictly, almost technically, musical values which some thrushes in North America, and even more (it is said) in Central America, and probably elswhere, can offer us. But no one composer ever has everything.

A curious feature of the Lyrebird's singing seems to me this: it has an upper and a lower storey, and here and there a little high-pointing spire. That is, a good part of the song remains near a certain (for a bird) quite low pitch, much of the rest near another much higher pitch, with now and then an ascension into even higher ones. Musical persons ought to decide for us what the pitches in question are, but I am sure that the total pitch range is one of the greatest in any bird, greater than any song in Europe or North America, say, at least three and a half octaves. Only one song with this range has come to my ears, that of the Japanese Bush

Warbler, as I heard it in Hawaii, where it has been introduced. This is considered a leading singer in Japan.

Since neither the Lyrebird nor the forests which it requires in order to survive have any close parallel elsewhere, the preservation of both will, I trust, always be a national objective. Only in a small part of the United States are there such tall trees, and they are very different indeed in character. The Sherbrooke Forest, with its amazing birds, yields experiences which can never be forgotten.



Note filmy lyrate and "feeler" feathers

Photo: A. G. Campbell.

FURTHER NOTES ON FLOWER PERFUMES

Two country members of the club have responded to my concluding query on the odours exhaled by native aroids and certain other plants [*Vict. Nat.* 69: 50. Aug., 1952]. The Rev. H. M. R. Rupp writes (20.8.'52) from Willoughby, N.S.W., concerning the "cunjevoi" (*Alocasia macrorrhiza*) and "dead dog lily" (*Typhonium brownii*), both indigenous to the North Coast region of New South Wales, where he has studied them *in situ* and under cultivation.

Mr. Rupp likens cunjevoi perfume to the scent of A. & F. Pears' historic transparent soap which dates from 1789—a very characteristic smell, but one whose formula is doubtless kept a close trade secret. As to the *Typhonium*, he calls its odour "disgusting"; but, strangely enough, a plant cultivated at Copmanhurst became quite odourless. No aroma was detected in the other two N.S.W. aroids, *Gymnostachys anceps* and *Pothos longipes* (not *P. loureirii*), which are sclerophyllous plants, with inconspicuous inflorescences.

Miss Jean Galbraith (Tyers, Vic.) challenges my classification of Early Nancy (*Anguillaria dioica*) scent. This had been placed in the HONEY group (with eucalypt, hakea and leucopogon); but Miss Galbraith insists that the odour is a replica of Japanese Plum blossom (*Prunus salicina*), i.e. a honey-sweet scent with subtle aminoid background. I have just smelt one of these plum trees in full bloom and entirely agree, noticing that it is inclined to induce olfactory fatigue (like violets). Early Nancy should therefore be transferred to the aminoid group.

Since writing for the August *Naturalist* (p. 47), I recall two other Australian species in which the perfume is delicately stock-like, viz. *Bulbophyllum baileyi* (a rock and tree orchid of north Queensland, with rather large dotted flowers that open in January), and *Stackhousia huegelii* (flowering in spring months, between the Murchison River and easternmost islands of the Recherche Archipelago, W.A.).

Following are a few examples of distinctive scents among Australian flowers which may be added to those already tabulated in *Vict. Nat.*, Dec. 1944, pp. 134-5.

Nerole type: *Pittosporum rhombifolium* of N.S.W. and Queensland, and *Stackhousia pulvinaris* of the Australian Alps.

Nutty-clover type: *Murraya ovatifoliolata* of N. Queensland, with scent as of sweet peas.

Alcoholic-fruity type: *Scleranthus diander* (like peach jam) and *Pimelea alpina* (as of paw-paw), both small alpine species.

[The exotic ericaceous *Rhododendron auriculatum* and *Clethra arborea* are strongly suggestive of pineapple guava fruit and quinces, respectively. *Noltea africana* in the Rhamnaceæ gives out a fœtid indolic odour like that of our Stinking Pennyworth (*Hydrocotyle laxiflora*).]

- J.H.W.

SILVER-LEAVED EUCALYPTS

"A.E.B." (*Vict. Nat.*, Aug., '52) asks whether other observers confirm his experience that leaf-eating insects prefer the silver leaf eucalypts? My experience definitely confirms this.

Several specimens of *E. cordata* were eaten out almost wholly every year to such effect that the plants gave up the struggle after a few years. *E. macrocarpa* was also badly ravaged, and although I succeeded in flowering it, the plant never looked happy nor healthy. Those I have seen in their natural habitat in Western Australia showed a robustness of leaf growth that I have never seen on any specimen cultivated in Victoria. *E. cinerea*, of which I have seen gloriously healthy specimens in the Albury district, are so defoliated as to be barely surviving in Melbourne gardens. It is odd that the highly glaucous seedlings of *E. globulus* when grown in its natural habitat are not so severely attacked as the others I have mentioned. A suggestion may be that the high cineol content of its oil may protect them.

—W. RUSSELL GRIMWADE

The contention that *Euc. macrocarpa*, the silver-leaved Rose of the West, and other glaucous-leaved species are specially susceptible to insect attack is true so far as the southern latitudes are concerned. (*Vict. Nat.*, Aug., 1952). In fact, it is on very rare occasions that a perfect specimen is seen in the Melbourne area. However, here in central western N.S.W. my observations tend to show that the silver-leaved species are no more susceptible than others.

We have *Euc. macrocarpa, Euc. rhodanthe, Euc. pulverulenta, Euc. cinerea, Euc. albida, Euc. tetragona, Euc. kruseana, Euc. desmondensis, Euc crucis, Euc. cordata, Euc. orbifolia, Euc. cordieri, Euc. glaucescens* and a number of other silver-leaved species, and not one of these are especially susceptible to insect attack. Except for some fungoid blemish on the leaves of *Euc macrocarpa* and *Euc. crucis* during the record rainfall of 65 inches in 1950, the silver-leaved species are almost leaf-perfect.

The mealy substance on the leaves and stems of so many of our eucalypts and other plants is one of nature's wonderful devices to prevent too rapid transpiration. In short, it is a protective device that is needed in very cold, no less than in very dry areas. All of us know from experience that a plant in very dry soil is more susceptible to frost damage than one in a well-watered area, so we find that nature has developed this device to prevent plants from succumbing to intense cold on the one hand and to the ravages of heat and drought on the other. Possibly a chemical analysis of leaves taken from, say, *Euc. macrocarpa* grown in Melbourne and one grown here on the western slopes of N.S.W., would reveal a big difference in the chemical make-up of the leaves. I know, for instance, that there has been proved to be a vast difference in the oil content of *Melaleuca alternifolia* grown in its native swamps and the same species grown on the uplands of the same district. Possibly herein may be the key to the incessant insect attack on silver-leaved species in southern Victoria. There is no real proof that these eucalypts in their native habitat are any more susceptible than are other species.

GEO. W. ALTHOFER.

AN APPEAL FOR PROSTANTHERA (MINT BUSH) MATERIAL

Fresh or pressed flowering material of the following Victorian species is sought:—*P. decussata* and *P. debilis*. From South Australia the following species are still needed:—*P. calycina, P. Baxteri, P. wilkieana*, and from N.S.W. *P. cineolifera, P. cryptandroides, P. ringens, P. Saxicola, P. marifolia, P. staurophylla, P. teretifolia* and *P. rugosa*. Any reader living in or having access to areas where these species grow is asked to kindly contact the writer at P.O. Box 5, Dripstone, S.W. Material of all the above is urgently needed to help in the study of this genus.

—GEO. W. ALTHOFER.

WHAT, WHERE AND WHEN

General Excursions:

Saturday, September 13—Walk from South Morang to Diamond Creek. Subjects: Birds and Botany. Leader: Mr. R. Ferguson. 9.4 a.m. Whittlesea train from Princes Bridge, alight at South Morang. Bring one meal. Please note the altered train time.

Saturday, September 20—Walk from Kalorama to Olinda Falls. Leaders: Botany Group. 10.10 a.m. Croydon train, then bus to Kalorama.

Sunday, September 28—Beaumaris. Subject: Wedding Bush. Leader: Mr. A. Brookes. 1.35 p.m. Sandringham train from Flinders Street, then Beaumaris bus to Hayden's Road, where leader will meet party at 2.20 p.m.

Sunday, October 5—Maranoa Gardens. Leader: Mr. A. J. Swaby. Mont Albert tram, No. 42, Collins Street, alight stop 54, Parring Road, up Parring Road to gates of Beckett Park, where leader will meet party at 2.30 p.m.

Saturday-Sunday, October 11-12—Week-end excursion to Maryborough. Leaders: Maryborough Field Naturalists' Club. Transport by private car; details of camping site and hotel accommodation available from Excursion Secretary at meeting.

Preliminary Notice:

Sunday, October 19—Parlour car excursion to Musk and Bullarto. Subjects: Golden and Olive Whistlers. Coach leaves Batman Avenue at 9 a.m., return to city approximately 7.45 p.m. Bring two meals. Bookings 21/- with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Saturday, November 1—Parlour car excursion to Berwick. Leader: Mr. Chalk. Coach leaves Batman Avenue 9.30 a.m., return to city approximately 7 p.m.

Friday, December 26—Saturday, January 3.—Christmas excursion to Mount Buffalo. Transport is by parlour coach, which will stay with party and be used for trips on the Mount. Approximate cost per person is £12/10/- for the nine days. Accommodation at the Horn Hut for 16 people. Bookings and full details from Excursion Secretary.

Group Fixtures:

(At Royal Society's Hall unless otherwise stated.)

Monday, September 22—Botany Discussion Group, 8 p.m.
Tuesday, October 7—Geology Discussion Group, 8 p.m.

EXHIBITS AT AUGUST MEETING

PLANTS.—Garden-grown native plants exhibited by Mr. K. Atkins, Mr. A. E. Brooks, Mr. Seaton.

ORCHIDS. Pencil Orchid (garden grown), Mr. Miller; Small Helmet Orchid (*Coribus inginculatus*)—rare near Melbourne—Yellingbo, Mr. R. Ferguson.

SHELLS.—From Red Bluff, Miss Weston; from New Hebrides Islands, Miss E. Raff; from Pacific coastal reefs, Miss Macfie.

BIRDS.—Albatross feet, Cape Patterson, Mr. Miller.

INSECTS.—Phasma, "Laurie's Ringbarker," Pascoe Vale, Mr. R. Garnet.

MARINE LIFE.—Barnacles; crab carrying eggs; large clawed burrowers (*Callianassa ceramica*), one with parasite *Iona*—Mrs. Freame.

STONE IMPLEMENTS.—Including an arrowhead from England—Mr. Brunton.

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WHAT, WHERE AND WHEN

General Excursions:

Saturday, October 18—Seaford. Subject: Ephemerals and Succulent Flora. Leaders: Botany Group. 9.50 a.m. Frankston train, alight at Seaford. Bring one meal.

Sunday, October 19—Parlorcoach excursion to Musk and Bullarto. Subjects: Golden and Olive Whistlers. Leaders: Bendigo F.N.C. Coach leaves Batman Avenue at 9 a.m., returning to city approximately 7.45 p.m. Bring two meals. Bookings 21/- with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Saturday, October 25—Smuggler's Gully. Subjects: Birds and Eucalypts. Leader: Mr. E. Hanks. Take 9.4 a.m. Whittlesea train from Prince's Bridge, alight at South Morang. Book second return South Morang. Bring one meal and a snack.

Saturday, November 1—Club Picnic. Parlorcoach excursion to Berwick. Coach leaves Batman Avenue 9.30 a.m., returning to city approximately 7 p.m. Bring two meals. Bookings with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Group Fixtures:

(At Royal Society's Hall unless otherwise stated)

Monday, October 27—Botany Discussion Group, 8 p.m.

Monday, November 3—Geology Discussion Group, 8 p.m.

—K. W. Atkins.

MOUNT BUFFALO CHRISTMAS EXCURSION

Friday, December 26th — Saturday, January 3rd

Bookings are now open for this excursion, the details of which are:—

The Horn hut has 16 bunks with mattresses, in 4 alcoves with curtains, one camp stove, an open fireplace. The hut is provided with firewood, cookery utensils, first-aid kit; no crockery or cutlery supplied. Permission has been obtained for those people to pitch tents who desire to camp in the vicinity.

Transport is by parlorcoach direct from Melbourne to the hut; the coach will stay with the party to be used for trips on the Mount. The fare, £12/10/-, is based on 15 people going; the fare cost decreases when the number goes above 15.

The Mount Buffalo Committee of Management charges a fee of 2/- per person per day (18/- altogether) to those who camp or use the huts on the Mount. This charge is not included in the fare.

It is advisable to bring warm clothing and bedding for the nights are cold; also waterproof clothing and boots are essential in case of bad weather.

In the matter of food, there are at least 23 main meals, plus minor snacks, to be provided for, and members are to cater for themselves. The coach will travel to Porepunkah twice during the week for supplies, but members are warned not to rely on obtaining their full supplies from this source. Bookings, stating whether the member(s) will need hut accommodation or camping, with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

* * *

The Victorian Naturalist

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PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, September 8, 1952. The President, Dr. Margaret Chattaway, and about 60 members attended.

The recent death of Sister Melville was announced and the meeting rose to observe a brief silence as a tribute to her memory.

Master Philip Ernst Bock (2 de Carle St., Coburg) was elected to Junior Membership on the motion of Messrs. A. A. Baker and T. C. Bryan.

The President extended a welcome to Dr. R. Melville of the Herbarium staff at the Royal Botanic Gardens, Kew. Dr. Melville, who will be working at the Melbourne Herbarium for nearly a year, responded suitably and expressed pleasure at the prospect of joining Victorian naturalists in some of their excursions.

The President again called for volunteers to assist in conducting school children through the Badger Creek Sanctuary, Healesville, and asked for the names of any who would be prepared to tutor boys at a Y.M.C.A. Summer Camp during January —an attendance of one whole day, a week-end or part of a week would be appreciated, and all expenses would be met by the Association.

Miss Margaret Blackwood (Botany School, University) gave an instructive and very entertaining lecture on the "Genetics of Corn" (*Zea mays*), illustrating her remarks with several lantern slides and a varied assortment of maize cobs in different colours. Many questions were posed by members, and a hearty vote of thanks was carried on the motion of Mr. J. H. Willis seconded by Miss I. M. Watson.

Outstanding among exhibits were the following: a large collection of West Australian wildflowers, by Miss N. T. Fletcher; zinc sheets being used in the actual printing of the late W. H. Nicholls's monumental work *Orchids of Australia*, by Mr. Frank Pinchin (one of the skilled artists); wasps and spiders, by Miss Kramer.

VALE THOMAS BRYAN

It is with profound regret that we announce the death of the Club's vice-president and honorary lanternist, Mr. T. C. Bryan, who passed away suddenly on September 10th—two days after he had attended a monthly meeting, apparently in good health. Although he joined the F.N.C.V. as recently as November 1946, Mr. Bryan lost no time in identifying himself with the activities of the Geology Group (formed earlier that year) where his enthusiasm and genial companionship will be particularly missed. The Club was represented at the funeral and extends its sympathy to relatives of the deceased.

PREMATURE AND ERRONEOUS RECORDS OF PLANTS FOR VICTORIA

By N. A. Wakefield

In the 1928 *Census of the Plants of Victoria*, there was published a list of 129 species which appeared in Mueller's *Key to the System of Victorian Plants*, but were omitted from the body of the *Census*. The purpose of this paper is to discuss this list as regards the species from the eastern border districts, to explain the sources of the erroneous records as well as of other premature ones, and to make a number of corrections to this and other publications. This will clear up many questions, and leave the way open for another paper later, in which proper credit can be given to those who, often unknowingly, discovered for the first time in this State, species prematurely recorded for Victoria.

Baron von Mueller made three excursions into East Gippsland for the purpose of adding its unique species to the lists of Victorian plants. In 1854 he travelled to the Snowy River in the border area, before going on from Omeo to Orbost. In the following year he explored the New South Wales alps and journeyed thence down along the Snowy River into Victoria. Finally, in 1860, he explored the Twofold Bay–Genoa district.

The Baron's botanical discoveries on these occasions are almost all embodied in official reports, made in 1854, 1855 and 1861, to the Victorian government; and most of the localities for the species are recorded by George Bentham in *Flora Australiensis* (1863-1878). Unless otherwise indicated, all plant species mentioned in this paper, under the headings of Mueller's three journeys, appeared in the corresponding systematic lists (second, third and sixth), accompanying these three official reports. The bracketed generic and specific names indicate how the species concerned has been reported (there and elsewhere) without qualification however as to whether it is a matter of synonymy or error in determination, etc. Some of these names have not been validly published.

Unfortunately, the present location of the border was not then generally known. It was surveyed in 1870-72; and the Baron included in his subsequent lists of Victorian plants, all the species met with on the three excursions, including those from the Kosciusko area and the vicinity of Twofold Bay, in New South Wales. Later, the collections of other botanists, from as far afield as the Shoalhaven district, were used to add yet more New South Wales species to Mueller's Key.

1854 JOURNEY

After his visit to the Cobboras Mountains in February, the Baron wrote: "From the Cobboras Mountains I continued in a north-easterly direction to the Snowy River, as far as the boundaries of New South Wales".

It is obvious from various of his remarks, that the botanist's idea of these boundaries was well to the north of their present position. Some specimens collected a year later were labelled "Summits of Mount Kosciusko on the Victorian frontier".

Mueller would certainly follow the old Monaro-Omeo track which skirts the Cobboras on the south side, descends to cross the Berrima River at 3,000 feet, rises again to pass into New South Wales, thence to the Ingeegoodbee River, and from there down "The Pinch" to the Moyangul or Pinch River at its junction with the Snowy. The track then ascends the valley of the Snowy for four or five miles to the mouth of the Tongaroo or Jacobs River, after which it again takes to the subalps and alps to continue on into Monaro.

Down "The Pinch", and in the valley of the Snowy River, one meets dry *Callitris–Eucalyptus albens* country, as contrasted to the alpine type between Omeo and Ingeegoodbee. Along the track, the former type is *wholly* within New South Wales. Amongst the numerous dry-type species collected in February 1854, on the New South Wales tract of the Snowy River, were:

> *Myoporum* (Disoon) *floribundum*—labelled "April" apparently in error.
>
> *Sorghum leiocladum* (Andropogon australis and Sorghum plumosum).
>
> *Bertya cunninghamii*—(probably), but it is not in any systematic list, nor are the specimens dated.

These three species have each been authentically recorded for Victoria only within the last twelve years.

Erigeron conyzoides—labelled "near the mouth of the Snowy River", but both Bentham and Mueller invariably placed the species as alpine, at 4-5,000 feet. Hence it seems that an error in data has occurred in connexion with the specimen label; and that the original specimen must have come from between the Cobboras and Snowy River, probably (but not certainly) Victorian. The "Coast Fleabane" of the *Census* is an unsuitable vernacular.

1855 JOURNEY

In his third report, in June 1855, the Baron reported, "I ascended the most northern alpine hill of the Munyang Mountains on the 1st January, 1855, and traversed in the weeks subsequent most of the principal elevations of the prodigious mountains . . . descending, in the latter part of January, along the Snowy River to the lower country . . .' Hence all alpine plant species collected in January 1855 were from New South Wales, on the extensive Kosciusko Plateau. These records have already been omitted from the present *Census*, with the exception of *Calotis glandulosa* from "Dry grassy ridges of the Snowy River towards Maneroo".

1860 JOURNEY

After his third excursion into the eastern corner of the State, Mueller reported, "During the month of September I was engaged in elucidating the vegetation along the south-eastern frontiers of the colony, crossing the country from Twofold Bay to the Genoa . . . and ascending again the Genoa River to near its sources, examining the adjacent elevated country and Nungatta mountains on my way".

Locations noted on specimens show that some time was spent exploring the Nungatta and Bondi (Rockton) Station areas near the Upper Genoa River—"Nungatta River" and its tributary "Nina Creek", "Nungatta Mtn." and "White Rock Mountain" (near Wog Wog) being mentioned. All these, and the "Upper Genoa River" of September 1860, are exclusively New South Wales localities; for, on the Victorian side of the border, there is a tract of Devonian sandstone with many species of showy plants which grow extensively and flower profusely in September, but which were never found by Mueller.

The non-Victorian material of September 1860 falls into two groups. First, we have the species which have never been found, as far as is known, within Victoria. These are:

> From Twofold Bay: *Stephania hernandifolia*, *Homalanthus populneus* (Omalanthus leschenaultianus, Carumbium populifolium), *Ficus aspera* (scabra), *Aphanopetalum resinosum* and *Asplenium nidus*; *Pomaderris cinerea*, *Panax murrayi* and *Vernonia cinerea*—none of which three was in the Sixth Syst. List; and *Prostanthera incisa*. This last, the *P. incisa* var. *pubescens* of Bentham, was based on specimens of *P. violacea*. *P. incisa* had appeared in the Fourth Syst. List, and is cited as "Cann River" in the 1928 Census, but both these records were apparently based on errors in determination.
>
> From Yowaka River: *Phebalium* (Eriostemon) *ralstoni* and *Lasiopetalum parviflorum*, as well as *Claoxylon australe* and *Acacia elongata*, neither of which is in the Sixth List. This Acacia is reported in Flora Australiensis as "Granite ridges near the Genoa River", but specimen labels indicate this to be an error.
>
> From Womboyn River came *Phebalium diosmeum* (Eriostemon phylicoides) and *Eucalyptus longifolia* (Woolsiana). (In Flora Australiensis this locality is spelt variously as Womboyn, Wombayn, Wombayne, Wombaya, Mombaya and Wombaza—apparently according to variatons in Mueller's spelling and writing!)

From "near Mount Imlay" came *Acacia subtilinervis*, which is not in the Sixth List; and *Epacris robusta* was found at White Rock Mountain, *Dodonaea calycina* (truncatiales) from Towamba River was listed by both Mueller and Bentham as from Genoa River also; but this seems to have arisen from a generalisation frequently used by the Baron when dividing a collection into a number of folders. Specimens from Gipsy Point, identified as this species by H. B. Williamson, are *D. attenuata*.

Next there are the species, prematurely listed in 1860, which have subsequently been authentically recorded for Victoria:

From Twofold Bay: *Eupomatia laurina, Zieria cytisoides, Trema aspera* (cannabina), *Beyeria lasiocarpa, Alectryon subcinereus* (Cupania xylocarpa, Nephelium leiocarpum), *Oxylobium* (Podolobium) *trilobatum, Goodenia barbata, Goodenia stelligera, Mitrasacme polymorpha*, and *Westringia rosmariniformis; Daviesia wyattii* and *Notothixos subaureus* (Viscum incanum)—neither of which is in the Sixth List; *Pomaderris ligustrina* and *Olearia* (Eurybia) *dentata*, which had already appeared in the Second and Third Lists respectively, owing to errors in determination; and *Pittosporum revolutum*, for which Bentham's Genoa River sitation is probably also a generalisation.

From Yowaka River came *Schoenus melanostachys* (not in the Sixth List), *Lasiopetalum ferrugineum* and *Hibbertia diffusa*. This last name appears in the First List and Mueller's Key, applying there to *H. linearis* var. *obtusifolia*; while the Yowaka River plants were included in Vol. 1 of the Key, as *H. monogyna*.

From Womboyn River came *Poranthera corymbosa, Isopogon anemonifolius* and *Schoenus imberbis*.

From "near Mount Imlay": *Hakea dactyloides* (saligna) and *Acacia subporosa*, neither of which is in the Sixth List; *Glossodia minor*, which appeared by error in the Second List; and *Baeckea linifolia*.

From Braidwood: *Haloragis monosperma, Cryptandra scortechinii*, (moluccanus), *Persoonia myrtilloides, Telopea oreades, Scutellaria mollis* and *Gahnia* (Cladium) *melanocarpa; Hierochloe rariflora*, which appeared in the Seventh List; *Pteris umbrosa*, which was in the Second List by error, and *Adiantum hispidulum*. Both these fern records were subsequently listed as "Genoa River".

From "Upper Genoa River" came *Pultenaea altissima* (flexilis).

OTHER COLLECTORS

Although Mueller made no more excursions to south-eastern New South Wales, he received further specimens from that district, and continued to record for Victoria species which had not been found in the latter State.

In 1879 and 1880, *E. Reader* supplied numerous specimens from Tilba Tilba and Mount Dromedary, including *Vitis baudiniana* (antarctica), *Xanthosia atkinsoniana, Backhousia myrtifolia, Ehretia acuminata* and *Carex declinata*—none of which has been found in Victoria; and *Desmodium brachypodum, Santalum obtusifolium*, and *Dryopteris* (Aspidium) *tenera*. From "The Peak", evidently about that district too, Reader sent *Cyathochaete* *diandra*. These last four species have recently been discovered in Victoria.

From 1883 to 1887, *William Bäuerlen*, a surveyor of New South Wales, sent the Baron much material from the south-eastern area of that state. Almost all of this was recorded as Victorian. First there are 18 species which have never been found in Victoria:

> From Braidwood, *Haloragis monosperma*, *Cryptandra scortechinii*, *Actinotus gibbonsii*, *Persoonia oxycoccoides*, *Persoonia revoluta*, *Hakea macreana* and *Prostanthera saxicola; Schoenus ericitorum*, which name was later erroneously applied to specimens of *S. imberbis* from Sperm Whale Head in Victoria; and *Chloanthes parviflora*, which was also recorded later from "near Swan Hill, Victoria".
>
> From Shoalhaven: *Zornia diphylla*, *Kunzea capitata*, *Epacris longiflora* and *Tricoryne simplex*.
>
> "*Gentiana quadrifaria*" was sent from Quiedong (near Bombala), and *Cassinia quinquefaria* from Cooma.
>
> *Acacia vestita* came from "Delegate District", and *Ammobium alatum* from Nungatta.
>
> *Actinotus helianthi* was recorded from a specimen from Milton; and there is also an example of it labelled: "At the summit of Mount Imlay, L. Morton, Dr. Mueller Comm. Sept. 1860".

Species recorded then from Bäuerlen's New South Wales material, but since found in Victoria, are:

> *Casuarina nana*, *Leucopogon esquamatus* (Styphelia appressus) and *Deyeuxia gunniana* (Agrostis breviglumis) from Braidwood.
>
> *Glossogyne tenuifolia* from Twofold Bay district.
>
> *Haloragis racemosa* (Bäuerlenii) and *Leucopogon* (Styphelia) *attenuatus* from Mount Tingiringi.
>
> (Although the border runs through both Delegate District and Mount Tingiringi, the specimens concerned were certainly from New South Wales. It has been noted that the very few specimens collected by either Bauerlen or Reader on the southern side of the border were invariably noted with "Victoria" on the original field label.)

In 1869-71, *Charles Walter* accompanied a geodetic survey party into East Gippsland. As well as Victorian specimens, he sent the Baron a quantity of New South Wales material—some of his own collecting, but some, too, possibly from other hands. Hence, the following four erroneous records were made.

> *Prostanthera violacea* came again, from "Cape Howe Ranges, Twofold Bay", and this time it was correctly identified; while *Homoranthus* (Darwinia) *virgatus* appeared with the label "East Gippsland". The latter name was included in the Seventh List, and the specimen was later (erroneously) labelled "*Darwinia taxifolia*", resulting, it seems, in both species being included in Mueller's *Key*.
>
> The Baron described "*Eriostemon amplifolius*" from leaf only, from Walter's collecting on the Upper Genoa River; but its true identity is not established, as the specimen is lost.
>
> *Restio gracilis*, a near-Sydney species, was recorded in the *Key* because of an "East Gippsland" specimen of Walter's, but the identity of which is unknown as the folder with this label, in the Melbourne

National Herbarium, later somehow came to contain an entirely irrelevant specimen. Another collection, labelled as *R. gracilis*, (Blackwatch Creek, C. French, Jan. 1889) is the subalpine *R. australis*.

MUELLER'S *KEY*

In 1885, there appeared Volume II of Mueller's *Key to the System of Victorian Plants*, with a census of the species of Victoria which were known at that time. Volume I of the *Key*, dated 1887-8, embraced also the additional species identified in the meantime, these being listed on pages 529-30 thereof. Almost an exact replica of these additions is found in the *Victorian Naturalist* 5: 14 (May 1888), where Mueller published a "Supplement to the Enumeration of Victorian Plants, comprising species added since Part II of the *Key*; with a few species before omitted"; arising from "Fieldwork of Messrs. W. Bäuerlen . . . and C. Walter". Following this supplement was a further list of Bäuerlen's records, of 33 plants which "approach the Victorian boundary almost within a day's good walking distance". This latter was a rather doubtful lot, most of them coming from some hundreds of miles away. One was already in the *Key* (Vol. II), and another was added in Vol. I, while only three of the others have subsequently been found in Victoria.

Of the eastern records of the *Key*, the reasons have not been forthcoming for the inclusion of *Leucopogon esquamatus, Marsdenia flavescens, Muehlenbeckia gracillima* and *Leucopogon* (Styphelia) *microphyllus*, each of which has been found in Victoria only during the present century.

Jacksonia clarkei appeared in Vol. I of the *Key*, p. 529. The type specimens are labelled from "Sources of Cann River, Mr. A. Clarke". This material, and other sent at the same time by Dr. Beckler from New England in north-eastern New South Wales, are so identical in all respects—size of specimens, aspect, stage of development of flowers and fruit, etc.—as to leave no doubt that the allegedly Victorian specimens were taken as such owing to a mixture of data. The species is confined to New England.

Errors in determination were responsible for inclusion of the following species:

> *Callistemon linearis, Eriostemon lanceolatus, Acacia glaucescens* and *Gleichenia hermanni*, according to the 1928 F.N.C.V. *Census*. *Baeckea camphorata* was an error for specimens of *B. gunniana*, *Persoonia lanceolata* for some *P. lævis* (salicina), *Eucalyptus pilularis* for *E. muelleriana* and *Doodia aspera* for *D. media*. Other similar errors apparently gave us spurious records of *Hypolepis tenuifolia, Epacris crassifolia, Fimbristylis ferruginea, Acacia crassiuscula, Myoporum tenuifolium* and *Melaleuca hypericifolia*.

All the species dealt with so far in this paper appear in Mueller's *Key*. An analysis of data on herbarium specimens, together with the publication of the various records, particularly in the matter of dates, and on the notes in the Baron's *Fragmenta,* leave no doubt at all that, even after the marking of the border-line, the policy was to include in the Victorian Census of Plants any species found within a hundred miles of the eastern part of the State. Probably this procedure was actuated by the idea that in the course of time such plants *would* be found indigenous to Victoria; it has actually been vindicated in about 50 per cent. of the species. So, with the advent of the *Key* in the 1880's, we find about 50 of the species with which this paper is concerned erroneously included, as well as a similar number prematurely so, with also nearly a score due to errors in determination.

It must be noted here that there is little or no evidence that any published locality records were based solely on Mueller's notes or memory. It seems that he adhered rigidly to the principle of having actual specimens to support all such records. But, in many cases, regional generalisations were later made and duplicate specimens so labelled when they were isolated or mounted for some special purpose. In these cases such terms as "Snowy River", "Genoa River", "eastern extremities of the colony", etc., have been used loosely; but the perusal of original labels almost always reveals the relevant specific localities upon which these are based. In some cases, too, specimens are missing from their rightful places in the Melbourne National Herbarium. From time to time, Mueller sent much material to overseas botanists, often on loan; and some such sets, when returned, found place in huge unsorted and supplementary bundles. When these are finally sorted, there is certain to be further light on some of the doubtful points in this and other papers on our flora.

SUBSEQUENT RECORDS

In later years, Charles Walter apparently received much material from botanists of other States, as well as of Victoria. There is definite evidence that, possibly after his death, many of his specimens were placed together, and a great number segregated later with their wrong labels. Thus, from his herbarium we find specimens of *Acacia elongata* and *Phebalium dentatum* (labelled "East Gippsland, Oct. 1877", but never listed for Victoria) and *Stephania hernandifolia,* labelled "East Gippsland" or "Victoria". None of these three is known to occur in this State. In some cases, such labels may have alluded to the supposed distribution of a species, rather than to the actual source of the specimen.

For this reason, no reliance can be placed on the data with specimens from Walter's herbarium, of *Olearia dentata, Lasiopetalum ferrugineum* and *Schoenus imberbis.* Through the same channels has come material, supposedly from East Gippsland and collected by Edward E. Pescott. These are the *Stephania* again from "Orbost", *Leucopogon microphyllus* (but not the East Gippsland form of it!) and *Baeckea linifolia*. *Olearia dentata* bears the label "McCulloch Range" (Murrungowar), and the occurrence there of the superficially similar *O. stellulata* supports the contention of mixed labels.

Dates on the other nine preceding specimens are all of about the same general period, ranging from 1897 to 1902.

Carl H. Grove, a farmer of Newmerella, made an exhaustive study of the flora of the Orbost district, sending specimens to Mueller for identification. Later, in 1906, he forwarded material of *Adenostemma viscosum* to the Department of Agriculture. This variation of action suggests that it might have appeared as a weed on his property, and the known distribution of the species leaves little doubt that it was a sporadic introduction in this case. (*A. viscosum*) grows naturally in north-eastern New South Wales, and was collected once on the lower Murray River in South Australia, the seeds evidently having been taken there by the flood-waters of the Darling River. Hence the old "N.W." record in the *Key*.)

The case of *Spiculaea* (Drakea) *irritabilis* has been discussed in *Vic. Nat.* 67: 168 (Dec. 1950).

H. B. WILLIAMSON'S WORK

In the *Victorian Naturalist* of May 1919 (Vol. 36. pp. 11-19) under the title "Notes on the Census of Victorian Plants", the late H. B. Williamson went rather fully into the question of these erroneous records. On page 17 is "List No. 1 (B), Plants Recorded for East Gippsland . . . only by specimens labelled with definite N.S.W. . . . localities, and no printed record". Most of these 45 species have been dealt with in the present paper, but two of them are really authentic records which should not have been included, namely—

> *Zieria cytisoides*: Reported in *Fragmenta* IX, p. 116, as "Gabo Island, Maplestone".
>
> *Conospermum taxifolium*: Found by Mueller "abreast of Gabo Island" in September 1860.

On page 19 of Williamson's paper, there is List No. 4, with nine species given as "recorded from Genoa River". How the writer came to list these as such is not known, for it is true of one only of them. Three were from Yowaka River, three from Twofold Bay, and one from Braidwood; which seven should have been in List No. 1 (B) on page 17. The other, *Pteris vittata* (longifolia), was originally found at Buchan River, not Snowy River as reported there.

A comparison of the text of the present paper with Williamson's lists indicates that at least 40 additional species could well have been included in the latter. Fortunately, many of these have since been found in Victoria, so they constituted premature rather than erroneous records. Some were missed owing to errors in determination, and others because of incorrect data on specimens.

F.N.C.V. *CENSUS*

In 1928 came the *Census of Victorian Plants*, embodying additions to our flora since Mueller's *Key*, and omitting most of the premature and erroneous records with which this paper has been dealing. These omissions are listed, with reasons, on pages 70 to 72 of the *Census*, and are mainly according to Williamson's recommendations of 1919. However, in several cases species were retained against that botanist's good advice; and, as well as these, there still remain about a dozen other erroneous records. These must be deleted.

The list of omitted species contains two which should not be there, and must be reinstated:

> *Bossiaea ensata* was collected by Mueller in March 1854, near the mouth of the Snowy River, where it still grows abundantly. Bentham cited the locality in *Flora Australiensis*, but the specimen has been lost.
>
> *Dianella cærulea* appeared in Mueller's First Systematic List (1853) following authentic Victorian collectings (Mount Disappointment, etc.), but was afterwards misunderstood as *D. laevis* var. *aspera* (Bentham) and *D. aspera* of the Third Syst. List. *D. cærulea* reappeared in Mueller's *Key*, only to be again deleted at a later date; and was finally "discovered" at Mallacoota in 1937!

In the *Victorian Naturalist* of November 1931 (Vol. 48, pp. 142-148) appeared Supplement 4 to the *Census of Victorian Plants*. Here, a few premature records were authenticated; and *Epacris longiflora* and *Chloanthes parviflora* were listed for deletion, the latter apparently without justification.

The vital points in this paper may be summarized by listing these amendments to the 1928 *Census of Victorian Plants*—

Delete—(errors in determination):

p. 3—*Hypolepis tenuifolia*
p. 14—*Restio gracilis*
p. 23—*Persoonia lanceolata*
p. 12—*Schoenus ericetorum*
p. 19—*Spiculaea irritabilis*
p. 57—*Prostanthera incisa*

Delete—(New South Wales specimens):

p. 28—*Stephania hernandifolia*
p. 34—*Acacia vestita*
p. 42—*Dodonaea calycina*
p. 46—*Backhousia myrtifolia*
p. 53—*Epacris longiflora*
p. 57—*Prostanthera violacea*
p. 32—*Aphanopetalum resinosum*
p. 34—*Jacksonia clarkei*
p. 44—*Lasiopetalum parviflorum*
p. 50—*Darwinia taxifolia*
p. 56—*Chloanthes parviflora*
p. 64—*Calotis glandulosa*

Remove to page 73—(aliens):
p. 62—*Adenostemma viscosum.*

Add:
p. 16—*Dianella caerulea* Sims .. .. S., E.
p. 22—*Conospermum taxifolium* Sm. .. .. E., r
p. 36—*Bossiaea ensata* Sieb. .. .. E.

In conclusion, it may be noted that there are also about a dozen premature records in the body of the 1928 *Census*, of species which have been found actually in Victoria only very recently, mainly during the last decade. Also, there are a similar number of the "erroneous" records of pages 70-72, which have been located as recently in this State. All these, as well as a great number of entirely new records, are to be dealt with in the near future in a full report of the botanical exploration of East Gippsland.

Finally, the writer would like to record his appreciation of the action of the Government Botanist, Mr. A. W. Jessep, in allowing the perusal of large numbers of specimens in the National Herbarium; and to Mr. J. H. Willis, whose enthusiastic interest and continual assistance in connexion with the project considerably lightened the tedious task of searching out the records of the eastern flora.

GREENHOODS GALORE

(Excursion to Langwarrin)

Joining the excursion van at Mentone on Sunday, 31st August, I was very pleased to see it comfortably filled with Field Naturalists and happy to note the presence of some children.

On leaving the van the members were shown specimens of the different species of *Pterostylis* they would find growing in profusion during their ramble. The time we had at our disposal before lunch we spent observing and collecting specimens and were amazed to find these orchids so prolific.

The species noted were as follows: Blunt Greenhood (*Pterostylis curta*), Nodding Greenhood (*P. nutans*), Trim Greenhood (*P. concinna*), Tall Greenhood (*P. longifolia*), Dwarf Greenhood (*P. nana*), Banded Greenhood (*P. vittata*), Maroonhood, (*P. pedunculata*). It was on Mt. Grand that we found *P. vittata*.

We admired and, like *Pterostylis*, appreciated the shade and shelter of the bower above our heads formed by the four species of eucalypts common to the district: Common Peppermint (*E. radiata*), Silverleaf Stringybark (*E. cinerea*), Swamp Gum (*E. ovata*), occurring on heavier soil; and Manna Gum (*E. viminalis*), growing on the sand.

We also found many specimens of the Gnat Orchid (*Acianthus reniformis*), Mayfly Orchid (*A. caudatus*) but the Mosquito Orchid (*A. exsertus*) had finished flowering. The Helmet Orchid was found by Mr. Atkins, and to him we give the honour of the day, for the writer had not known previously that this orchid occurred on the property.

After lunch, a half-mile walk along the road and a short climb brought us to the top of Mt. Grand. We were very well rewarded by a fine view of the Dandenong and Warburton Ranges on our left; to the right, the expanse of Westernport Bay with the Strzeleckies in the distance;

and beyond were the snowclad Baw Baws to complete the glory of the panorama.

Real mosquitoes were plentiful on the mount, and the blood lost in the battle between the winged gnats and the Field Nats. would have made a helpful donation to any blood bank. So down the mount we trailed to regroup our forces on the roadway, some to walk along towards Pearcedale, some to make a round trip back through the bush in search of the one koala we always find. In this we were successful.

In parts *Hardenbergia violacea* carpeted the roadside in purple and twined up anything that would lend it support. One Wedding Bush (*Ricinocarpus pinifolius*) was found in bloom, racing ahead of its tardy fellows, to greet the coming spring. Beard-heath was plentiful and in full bloom. Pink Beard-heath (*Leucopogon ericoides*) was more plentiful than the common species (*L. virgatus*). We found the Horny Conebush (*Isopogon ceratophyllus*) here and there.

Reaching Mentone after a happy day with *Pterostylis*, the host took leave of his guests for the day with a *Pterostylis* farewell and said "I will 'Trim' my sails, and without being too 'Curta' will so so-'Longifolia' and run home to 'Nana'." —E.J.R.

Birds on the Longwarrin Excursion

As the weather was ideal for this excursion the birds were active. The highlight for the day was the nesting of the Golden Whistler (*Pachycephala pectoralis*). The nest was discovered by Frances Pinches in tea-tree (*Melaleuca squarrosa*). The birds were incubating the eggs, and we watched them change over, the female remaining on the nest for a longer period than the male. It is generally considered that a brightly coloured male bird when on the nest would be a "draw-card" for predators, but in our opinion no more of a "draw-card" than the female singing loudly from her positon on the nest. In this case, however, the nest was fairly well concealed.

A Yellow Robin (*Eopsaltria australis*) with young, and a Brown Thornbill (*Acanthiza pusilla*) building were the only other nests found for the day. We watched one of the Thornbills working on the nest. Fantail Cuckoos were in good voice and several were seen. Other cuckoos for the day were the Horsfield Bronze and the Pallid. Orange-winged Sittellas demonstrated their versatility by going up, as well as down, the tree trunk. —RON. FERGUSON.

THE LYREBIRD AT MT. TAMBORINE, QUEENSLAND

In the "Lyrebird" issue (September 1952) of *Vict. Naturalist*, Mr. George Mack refers, on page 68, to the former plentiful occurrence of the Albert Lyrebird on Mt. Tamborine, 35 miles south of Brisbane, and states that a few birds are still to be found on the mountain. I can confirm the latter statement, as a recent letter from Miss Irene Stoddart describes, with other interesting nature observations, her sighting of a female lyrebird that visited her delightful garden, situated quite close to the well-known Eagle Heights Hotel. Miss Stoddart's own words are quoted as follows: "Last week (end of August 1952) a porcupine (echidna) walked right up the side of my fence, and it was fun to watch the curiosity of the various birds. Then a lyrebird hen called here. I wish she had brought her mate. As one girl to another it would have been interesting, but perhaps it is best not to introduce your donah to a pal."

—H. C. E. STEWART.

(Photograph K. A. Hindwood)

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WHAT, WHERE AND WHEN

Excursions:

Sunday, December 14—Botany Group Picnic at Fairy Dell. Take either 8.48 a.m. or 8.55 a.m. train to Upper Ferntree Gully, then Monbulk bus to terminus. Bring two meals.

Friday, December 26—Saturday, January 3

MOUNT BUFFALO CHRISTMAS EXCURSION

The Horn Hut has 16 bunks with wire mattresses, in four alcoves with curtains, one camp stove, an open fireplace. The hut is provided with firewood, cookery utensils, first-aid kit; no crockery or cutlery supplied. Permission has been granted to those people who desire to camp in the hut vicinity. Transport is by parlor coach direct from Melbourne to the hut; the coach will stay with the party to be used for trips on the Mount. The fare is £12/10/-. The Mount Buffalo Committee of Management charges a fee of 2/- per night per person for the use of the hut. This charge is not included in the fare cost. In the matter of food, members are to cater for themselves. The coach will travel twice to Porepunkah for supplies; members are warned not to rely upon obtaining their full supplies from this source. The coach leaves Batman Avenue at 8.15 a.m., lunch at Benalla, reaching the hut at 4.45 p.m. Bookings, with £5 deposit, stating whether members will need hut accommodation or be camping, with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Preliminary Notice:

Saturday, January 31—Parlor coach excursion of 200 miles to Warburton, Noojee, via MacVeigh's and Loch River, return to Melbourne through Warragul. Coach leaves Batman Avenue 8 a.m., returns to city approximately 8 p.m. Bring two meals. Bookings 24/- with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

No Botany Group meeting in December; no Botany or Geology Group meetings in January.

VICTORIAN WILDFLOWERS

So much is heard about West Australian wildflowers that perhaps one may be excused for asking whether Victoria can make any claim to have equally outstanding flora.

Scenes of outstanding beauty which come readily to my mind are of incredible numbers of Purple Diuris orchids (*D. punctata*), of hillsides covered in winter with common Heath (*Epacris impressa*), in red, white, and every shade of pink thrown in for good measure. Then there are acres of pure gold when it is Hakea Wattle (*Acacia hakeoides*) time near Bendigo, a sea of white blossom when the Coastal Tea-tree (*Leptospermum laevigatum*) is in flower at Beaumaris, and gullies filled with gold when the Silver Wattle (*Acacia dealbata*) is in season.

With our Christmas Bush (*Prostanthera lasianthos*) providing a summer display and covering pathways with snow-like blossom, and hillsides covered in spring with flowers like the Wax-lip Orchid (*Glossodia major*), Purple Coral-pea (*Hardenbergia violacea*), Pinkeye (*Tetratheca ciliata*), Correa (*C. reflexa*), Hovea, and Fairy Wax-flower (*Eriostemon obovalis*), I think that Victoria can claim to be well to the forefront where spectacular wildflower displays are concerned. —A.E.B.

The Victorian Naturalist

Vol. 69 — No. 7 NOVEMBER 10, 1952 No. 827

PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on Monday, September 14, 1952. The President, Dr. Margaret Chattaway, and about 100 members attended.

The death of two members, Miss Collier and our Vice-President, Mr. T. C. Bryan, was announced with much regret, and members stood in silence for a minute as a tribute to their memory. Mr. Bryan's death had occurred very suddenly, and our President, Dr. Chattaway, had attended the funeral. Mr. A. A. Baker spoke of Mr. Bryan's valuable work with the Geology Group.

Mr. V. H. Miller spoke of the death of Mr. Lush at the age of 91. Although not a member of our Club, Mr. Lush was well known to many of our members as a keen ornithologist.

The President announced that the Council had nominated Mr. A. A. Baker as the new Vice-President to fill the vacancy caused by the death of Mr. Bryan.

A volunteer was asked for to fill the position of Hon. Lanternist in place of the late Mr. Bryan.

As the grave of Baron von Mueller was in need of being tidied up, any member able to give time to this matter was asked to advise the President.

Miss Wigan reported having received a letter from Miss Carol Walker, who has recently been in Spain, and also a letter from Mr. David Fleay, who was enjoying living at Burleigh Heads. The late Sister Millbourn had requested Miss Wigan to present to the Club library on her behalf a copy of *A Handbook of Forest Trees*, by Alfred J. Ewart, and this was handed over to the President.

Reports were given on the very successful week-end at Maryborough recently. The Maryborough Field Naturalists Club was affiliated with our Club about a month ago, and Dr. Chattaway on behalf of our Club had presented a copy of *Wildflowers of Victoria*, by Jean Galbraith, to the Club.

Mr. Garnet advised that the National Parks Bill had been read in Parliament for the second time, and members were urged to procure a copy from the Government Printer with a view to bringing any unfavourable features to the notice of their local Member of Parliament before the third reading of the Bill.

Mr. E. E. Lord had attended a meeting of the Save the Dandenongs League at Olinda recently, but as unofficial representative of the Club.

The speaker for the evening was Prof. S. M. Wadham, his subject being "Drought in the Gulf Country." After a brief survey of soils, plants, rainfall and general conditions, Prof. Wadham spoke of various cattle stations he had visited. Coloured slides gave a grim picture of the area during the recent drought.

EXHIBITS

Botany

Garden-grown native flowers—Mr. J. S. Seaton, Mrs. D. Lewis.

Pterostylis longifolia, Diuris punctata, Cymbidium lowianum, Acianthus gunnii—Mr. V. H. Miller.

Grevillea juniperina, G. mucronulata, Eucalyptus preissiana—Mr. P. Fisch.

Six water-colour drawings of native orchids—Mr. H. P. Dickins.

Swainsona behriana, collected at Maryborough on Oct. 12, 1952—Mr. J. Ros Garnet.

Geology

Cambrian fossils from the Macdonnel Ranges, gypsum crystals, epidote pebble, brolite schist—Mrs. Woodburn.

Artifacts

A native knife from Renner Springs, N T.—Mrs. Woodburn.

OBITUARY

MR. T. C. BRYAN

It is with regret that we record the sudden death on September 10 of Mr. T. C. (Tom) Bryan, a regular attender at the meetings and excursions, whom most members will remember by his quiet disposition.

A member of the Council and Vice-President at the time of his death, he had rejoined the Club in February, 1947, after some years in Roma, Queensland, and Molesworth, Victoria. He was keenly interested in geology and in photography, which was used to illustrate most of the Geology Group's activities, and he was always willing to record with his camera any subject which might be of interest to fellow naturalists. By regular visits to an area at Black Rock (under observation by the Geology Group), he obtained a series of photographs of the erosion taking place on that part of the coastline. He also followed with interest, and assisted with, the activities of the Hawthorn Junior Naturalists.

Mr. Bryan was 55 years of age and not married. The Club has lost an active member and a keen naturalist, and we extend to his relatives our sincerest sympathy.

—A.A.B.

NEW BEES AND WASPS — PART XVII

RARE PARASITIC WASPS

By TARLTON RAYMENT, F.R.Z.S.,
Honorary Research Associate, National Museum, Melbourne.

INTRODUCTION

The phylogenetic position of trigonalid wasps appears to lie between the ichneumonid and the vespid families; the wasps have the long filiform many-segmented antennae of the former, and the stouter body and bright colours, black, red and yellow, of the latter. Indeed, the general facies, with the exception of the long slender flagellum, is not unlike that of certain vespid species. The large quadrate mandibles are tridentate or quadridentate, and are a conspicuous feature of the "face". The females may be handled with impunity, for the sting is a true ovipositor, incapable of penetrating human epidermis.

The literature on these anomalous parasitic wasps is very limited, and prior to the publication in 1948 of the author's paper describing *Taeniogonalos heterodoxus*, only two species had been recorded from Australia—*T. maculatus* (Smith) from Queensland, and *Mimelogonalos bouvieri* Schultz, from Tasmania. Tillyard (1926) mentions an undescribed species from Stradbroke Island, Queensland.

Observations on the biology were even rarer, until Janet W. Raff (1934) published her notes on *T. maculatus* Sm., describing the emergence of this species from the pupal cases of a Victorian saw-fly.

At Lane Cove, Sydney, Norman Rodd (1946) was fortunate enough to observe the females of *T. heterodoxus* Raym. ovipositing in the leaves of a Sydney peppermint tree (*Eucalyptus piperita*) and correlated the remarkable ventral structure of the female abdomen with the holding of the margin of a leaf. The sterna of males lack these opposing processes.

It appears that vestiges of these remarkable structures have survived in certain bees, and there is little doubt that the unique abdominal sterna of the bee *Meroglossa miranda* are homologous with those of primitive wasps; the inconspicuous tubercle of *Parasphecodes fulviventris* is now merely ornamental. Another unique character, doubtless inherited from some waspish ancestor, probably saw-fly, is the remarkable flabellate flagellum of another bee, *Cladocerapis bipectinatus* Sm.

Rodd was able to confirm the observation of Clauson. The eggs of *Pseudogonalys* require to be ingested by saw-fly larva before they can hatch. Trigonalid wasps are extremely fertile, but it appears that few larvae reach maturity, and males are rarer than females.

The present paper describes three new species of *Taeniogonalos*, one from Victoria and two from Queensland, thus increasing the number of Australian wasps to six. The author is indebted to the courtesy of Messrs. Burns and Oke, National Museum, Melbourne, for the opportunity to study these insects.

The author's researches in the Australian Hymenoptera are assisted with a grant from the trustees of the Science and Industry Endowment Fund.

TAENIOGONALOS BURNSI sp. nov.

TYPE, Female—Length, 14 mm. approx. Black and yellow.

Head transverse, shining, a few white hairs; face-marks two small triangular yellow marks lateral of scapes; frons coarsely rugoso-punctate, a spot of yellow above scapes; clypeus shining, with many smaller punctures and white hair; supraclypeal area concave; vertex coarsely rugoso-punctate; ocelli close together; a wide yellow band on margin of large compound eyes; genae polished, coarse punctures; labrum not visible; mandibulae large, black, tridentate and quadridentate, a large rectangular area yellow in middle; antennae filiform, ferruginous in middle, black apically, globose scapes amber.

Prothorax black, rugose; tubercles black; mesothorax entirely black, excessively coarsely rugoso-punctate, divided into three areas by two large curved sulci; scutellum similar, but bituberculate; postscutellum smoother, with two minute yellow dots; metathorax with a median sulcus, coarsely, but more or less obliquely, rugoso-punctate; abdominal dorsal segments black, close piliferous punctures, golden hair, yellow bands on 1 and 2, and yellow linear marks on 4, maculae on 5; a fine longitudinal carina; ventral segments with the yellow band persisting on 2.

Legs ferruginous, trochanters blackish, white hair; tarsi reddish; claws reddish; hind calcar reddish; tegulae ferruginous; wings fuliginous on costal margin; nervures brown; cells normal for the genus; pterostigma ferruginous.

Locality: Cobunga, Victoria, February 19, 1947; leg. Alex N. Burns.

Type in the collection of A. N. Burns.

Allies: *T. maculatus* Sm., which is smaller, with yellow dots on metathorax, scutellum and postscutellum, and lacks the carina on the abdominal terga.

TAENIOGONALOS MINUTUS sp. nov.

TYPE, Male—Length, 6 mm. approx. Black and yellow.

Head transverse, shining, a few white hairs; face-marks limited to clypeus; frons transversely rugose; clypeus convex, butter-yellow, emarginate at base and apex; supraclypeal area concave:

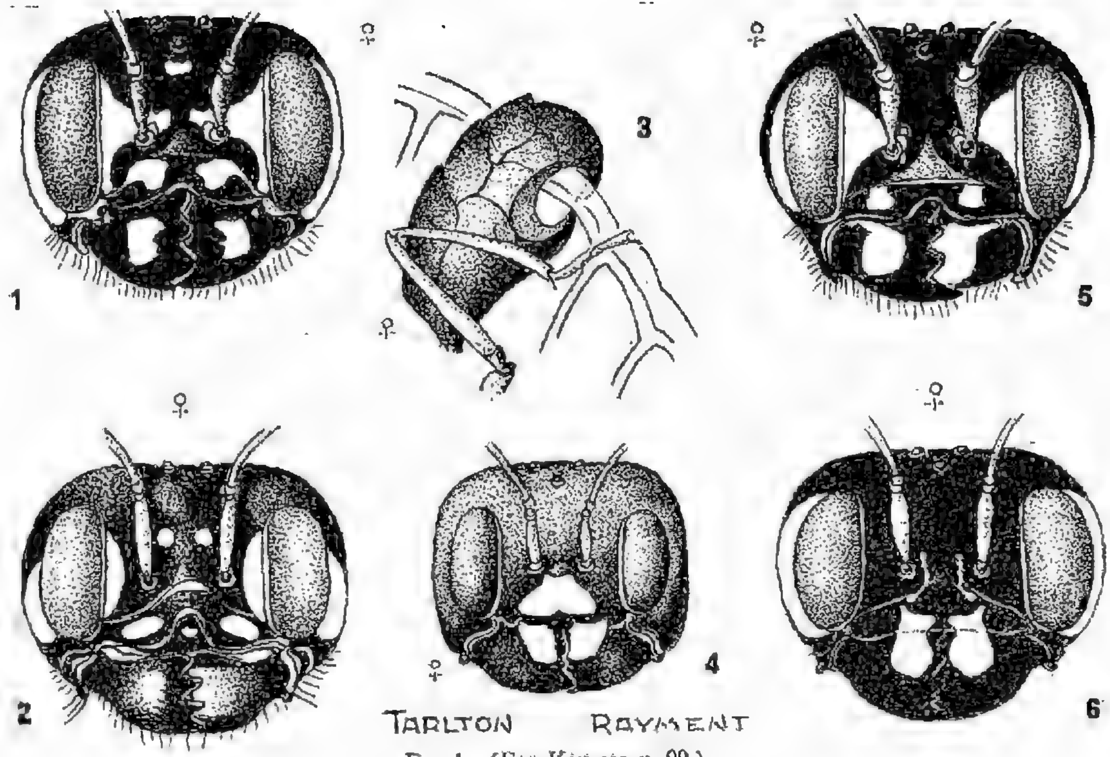

Fig. 1. (For Key see p. 99.)

vertex polished, a few large punctures; compound eyes small; genae polished, a few shallow punctures; labrum not visible; mandibulae tridentate, yellow, with a black cutting edge; antennae with globular ferruginous scapes, antennae filiform, black.

Prothorax black, shining, many punctures and a few white hairs; tubercles yellow; mesothorax caniculate, shining, excessively coarsely punctured; scutellum yellow, with a deep median sulcus, large punctures; postscutellum black, with a small yellow band, metathorax with no elevated dorsum, black, densely and coarsely rugoso-punctate, a few white hairs laterally; abdomen ovate, polished, a few piliferous shallow punctures and white hair; ventral segments black, polished.

Legs yellowish-ferruginous, hind femur clear yellow; tarsi brownish-black; claws blackish; hind calcar amber; tegulae brown; wings hyaline; nervures brown; cells normal for the genus; pterostigma brownish-black; hamuli about eight.

Locality: Mt. Tambourine, Queensland, January 27, 1950; leg. Chas. Oke.

Type in the collection of the National Museum, Melbourne.

Allies. Not close to any described species, but easily known by its small size and entirely black abdomen.

TAENIOGONALOS TRICOLOR sp. nov.

TYPE, Female—Length, 9 mm. approx. Red, black, yellow.

Head laterally small, from above quadrate, reddish; face-marks yellow, a lunate mark lateral of the scapes, a macula above, and a larger one below the articulation of the scapes; frons black, coarsely rugoso-punctate, bituberculate; nude; clypeus black, two large yellow maculae laterally, numerous long white hairs, emarginate anteriorly; supraclypeal area deeply concave; vertex reddish, coarsely rugoso-punctate, a yellow macula below the median ocellus; compound eyes small; genae red, suffused with black, rugoso-punctate, a long lunate yellow mark on posterior orbital margin, a few white hairs; labrum not visible; mandibulae black, broad, a large yellow macula in middle, left one tridentate, the right one quadridentate; antennae long, filiform, ferruginous, black apically and acute, scapes short, black, distally some yellow.

Prothorax black, short, deeply impressed, a minute yellow spot laterally; tubercles yellow; mesothorax excessively coarsely rugose, black laterally, with reddish median mark, anteriorly two large yellow maculae, a few white hairs; scutellum large, reddish, depressed in middle, two large subtriangular marks laterally; postscutellum reddish, two yellow bands laterally, with a median mark shaped like two arrow-heads cojoined at bases; metathorax black, with a median red patch, two large yellow marks semicircular in shape, a few white hairs, large punctures; abdominal

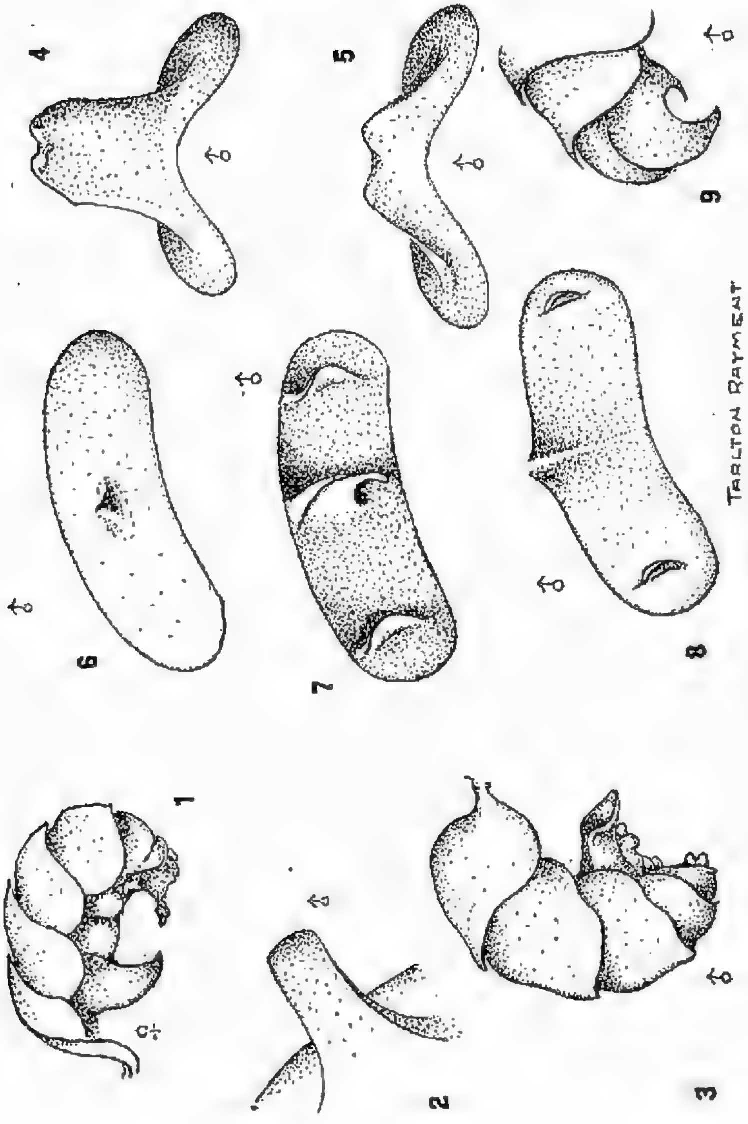

FIG. 2. (For Key see p. 99.)

dorsal segments covered with much pale hair, one red with a yellow band, two red and black with a wide yellow band, three black; four, five, and six yellow, with a black line anteriorly; ventral segments black, three, four and five with a yellow dot laterally, the large second sternum with the yellow band of the tergum continuous.

Legs reddish, femora black on basal half, tibiae yellow basally, trochanters yellow; tarsi reddish-ferruginous; claws bifid, red; hind calcar red; tegulae reddish, with a yellow spot; wings yellowish, suffused with sepia about the radial and first cubital cells; wings covered with long white hair; nervures sepia, second recurrent obsolete; first cubital cell large, two small cubitals subequal; pterostigma long, narrow, amber; hamuli weak, about six.

Locality: Kuranda, Queensland, November 15, 1951; leg. A. N. Burns.

Type in the collection of A. N. Burns.

Allies: This species falls between *T. heterodoxus,* with a reddish head, and *T. maculatus* Sm., which has only small yellow dots on the black thorax. The new species has the red, yellow and black pigment in about equal proportions.

New Records

Taeniogonalos maculatus Sm.

A series of typical males and females.
Heathmont, Victoria—March 7, 1935. A. N. Burns.
Heathmont, Victoria—April 16, 1946. A. N. Burns.
Ferntree Gully, Victoria—March 7, 1932. A. N. Burns.

The five species in the genus may be separated by the following key:

	Large, abdomen with yellow band	1
1	Head black, with yellow facial marks	*T. maculatus* Sm.
	Small, abdomen without yellow band	2
2	Head black, without lateral marks	*T. minutus* Raym.
	Head red, large yellow marks	3
3	Scutellum red	*T. heterodoxus* Raym.
	Clypeus black	4
4	Scutellum black	*T. burnsi* Raym.
	Clypeus with yellow maculae	5
5	Scutellum with large maculae	*T. tricolor* Raym.

REFERENCES

Clausen, C. P., *Entomophagous Insects,* p. 56, 1940.
Raff, J. W., *Proc. Roy. Soc. Vict.,* pp. 47-77, 1934.
Rayment, T., *Australian Zoologist,* Vol. II, pt. 3, p. 241, 1948.
Rodd, N. W., *Australian Zoologist,* Vol. XI, pt. 4, p. 338, 1951.
Tillyard, R. J., *Insects of Australia,* p. 291, 1926.

KEY TO ILLUSTRATIONS

FIG. 1.—Front of head-capsules of five species of Trigonalid wasps to show the yellow patterns of the faces.

No. 1. *T. tricolor* Raym.
2. *T. heterodoxus* Raym.
3. The abdominal processes of the females serve to hold the margin of the leaf during ovipositing. (After Norman W. Rodd.)
4. *T. minutus* Raym.
5. *T. maculatus* Sm.
6. *T. burnsi* Raym.

FIG. 2.—Homologous structures of wasps and bees.

No. 1. Abdominal processes of Australian female wasp *Taeniogonalos heterodoxus* Raym.
2. Diagonal view of spine on second sternite.
3. Abdominal processes of Australian bee *Meroglossa miranda* Raym.
4. Rear view of process on third sternite.
5. Rear view of process on fourth sternite.
6. The tubercle on the second sternite of *Parasphecodes fulviventris* Friese, is a vestigial remnant.
7. Abdominal processes of *Gnathoprosopis marianella hamulata* Raym.
8. Abdominal process of undeveloped males of both species and subspecies of *Gnathoprosopis*.
9. Apex of abdomen of bee *Goniocolletes* sp.

"FLOWER AND FEATHER AT MT. BUFFALO NATIONAL PARK"

(Book Review)

To those who have visited or to those who intend to visit Mt. Buffalo this little booklet will be welcome. The author, Mr. H. C. E. Stewart, is an active member of the F.N.C.V., and has wide interests in the field of natural history.

After a note about early visits to, and reports about, the area, the writer proceeds to describe it as it is to-day. Several pages are devoted to the botany of the plateau, with a special mention of some interesting species of eucalypts and wattles. The visitor is informed what wildflowers are likely to be found during different months, and where they may be seen to best advantage.

A full list of native birds recorded for the area is given with the R.A.O.U. check-list number of each species for further reference. Birds common in the locality are described in some detail.

Travelling in other countries, Australians often remark the amount of publicity given to National Parks. For instance, at Yosemite, U.S.A., not only is literature available, but in the centre of the park is a museum devoted exclusively to that area, covering its fauna, flora and geology. Though there is little possibility of projects such as this being undertaken in our National Parks for a long time to come, the collection of botanical specimens available at the Chalet, and Mr. Stewart's excellent work, are steps in the right direction. This well-produced booklet is on sale at The Chalet, Mt. Buffalo, for one shilling. —E.S.H.

CROCODILES "AT HOME"

During a trip to North Queensland last year I visited the Mount St. John Sanctuary at Townsville, where six salt-water crocodiles (*Crocodilus porosus*) are the main attraction. The largest and best known of these is Barnacle Bill, who shares a small enclosure with a ten-foot crocodile. His girth is tremendous, and he must be at least 18 feet in length; he has put on a lot of weight, as he gets practically no exercise. I watched him from a distance of a few inches—through a wire fence.

The sanctuary is believed to be the only one in Australia where crocodiles breed regularly in captivity. In a large, marshy pond, three saurians live under practically natural conditions. I was able to climb over the fence and take a photo of a 15-footer, asleep on a mud bank, during a week-day visit to the sanctuary. The crocodiles are fed every Sunday, usually by Mr. St. John Robinson, the owner of the sanctuary. Watched by a large crowd of tourists, Mr. Robinson entered Barnacle Bill's cage, and spectators gaped as he prodded the crocodile with a stick. Bill grunted and snapped and moved slowly forward. Dr. Robinson then poked a stick, to which was attached a large piece of meat, into the reptile's mouth; the meat was quickly gulped down. The other crocodiles were then fed in a similar fashion. I watched the sinister head of a crocodile, covered with green aquatic vegetation, gliding slowly through the water and found it difficult to believe that I was not watching a crocodile in a jungle stream.

Shortly before my visit a female crocodile made a nest in an old galvanized iron tank on the edge of the pool. When two eggs hatched out, two men entered the enclosure and attempted to remove the nest, but the crocodile attacked them. However, she was securely held with rope and the nest was removed to a wire cage with a shallow concrete pool where subsequently 90 per cent of the eggs hatched out. The baby crocodiles were two months old and 12 inches long when I saw them. The lively youngsters had needle-sharp teeth, soft bodies and green eyes. I found the little creatures very interesting and thoroughly enjoyed my two visits to the sanctuary.

J. Mollison.

SOUTH WARRANDYTE EXCURSION 12/7/52

Twenty-six people attended this excursion which was held in pleasant weather. At a gorge in Beauty Gully Road fossil remains and the attractively marked stone being quarried there were of interest. Along Anderson's Creek the prevalence of Silver Wattle (*Acacia dealbata*), Christmas Bush (*Prostanthera lasianthos*), Prickly Moses (*Acacia verticillata*) and many other plants was noted. After lunch at the Gold Memorial and when the afternoon excursionists had joined us, a talk was given by the leader on the history of the Memorial Cairn and of gold mining around Warrandyte. The route followed after lunch was to Fourth Hill and then on to Warrandyte along roads where many beautiful Cootamundra wattles (*Acacia baileyana*) were seen.

A. E. Brookes.

ERRATA

Premature and Erroneous Records of Plants for Victoria—Vict. Nat., Oct., 1952.

Page 83, line 31: Delete "From Braidwood: *Haloragis monosperma, Cryptandra scortechinii*"; replace with "From Nungatta Mountain: *Elæocarpus holopetalus, Rubus hillii.*"

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PROCEEDINGS

An Extraordinary General Meeting of the Club was held in the Herbarium at 7.45 p.m. on November 10, 1952, with Dr. Chattaway in the chair, to discuss the application of the "Save the Dandenongs" League for affiliation with the F.N.C.V. It was proposed by Mr. Lewis, seconded by Mr. Lord, and carried, that the application of this League be endorsed by the F.N.C.V. Mr. Lord spoke to the motion, stating that as the aims and objects of both organizations were similar, it was advisable to support this League, and appealed to members of the F.N.C.V. to join it, the subscription being one shilling. Dr. Chattaway then declared the Extraordinary General Meeting to be adjourned.

The Monthly Meeting of the Club followed, with Dr. Chattaway in the chair, and was attended by 86 members and visitors.

Mr R. L. Jensz, of 76 Green Street, Ivanhoe, who was nominated by Mr. and Mrs. P. Fisch, was elected a member and welcomed by the President.

Mr. Béchervaise then proceeded with his lecture on Manus Island, illustrated by many excellent colour slides of North Queensland, New Guinea, Guam, Manus Island, and various Pacific atolls taken during during a 12,000 mile journey with a squadron of Lincoln bombers on a training flight to Manus Island. Dr. Chattaway thanked the lecturer on behalf of the Club.

Dr. Chattaway reminded the meeting that Christmas cards, illustrated with a design of the Helmeted Honeyeater, were still available.

Mr. Miller reported an act of cruelty committed by some small boys, who had attached a blackbird to a bomb, which they had fired, injuring the bird.

Mr. Gabriel was present after a long illness, and commented on his exhibit of shells.

EXHIBITS

BOTANY.—Diuris from Beaconsfield—Miss Elder. Garden-grown native plants—Mr. Chalk, Mr. Miller. Collection including *Verticordias* grown by Mr. F. C. Payne of Adelaide, exhibited by Mr. J. S. Seaton; and *Hymenosporum flavum* from Botanic Gardens, exhibited by Mr. K. W. Atkins. (This is a rain forest tree from Queensland and N.S.W., closely related to the Pittosporums. It is suitable for the home garden, has rapid growth, symmetrical pyramidal habit, and produces profuse flowers with a frangipanni perfume. The flowers are yellow, marked with red at the throat.)

SHELLS.—Marine shells of the genus *Amussium* from various localities—Mr. C. J. Gabriel.

PHOTOGRAPHS.—Taken on Maryborough trip—Mr. R. D. Lee.

SNAKE.—Head of taipan from N. Queensland—Mr. Saruvich.

NOTES ON MARSUPIALS AT THE TAMAR RIVER, TASMANIA

By RON C. KERSHAW

The locality referred to in these notes is that bordering the western bank of the Tamar River, which is known as Clarence Point. Here two nest sites of the Tasmanian Rat-Kangaroos were found, one upon the slope of a hill of igneous rock near Kelso, the other upon the bank of the West Arm. They were separated by almost two miles of bushland and orchard.

Both of the nests described were discovered accidentally, the occupying animals drawing attention by their hurried departure. The nest at the first of the sites referred to contained two specimens of the Tasmanian Rat-Kangaroo or Bettong (*Bettongia cuniculus* W. Ogilby 1838). By reason of the conspicuous difference in build of the two animals it would appear that they were male and female, the female being of course much slighter than the male. Characteristic head and body length quoted by Lord and Scott (*A Synopsis of the Vertebrate Animals of Tasmania*, 1925, p. 249) is of the order of 400 mm. With this in mind, the nest appeared barely adequate to contain two animals. However, it was suitably shaped and roomy inside, and no doubt the walls are fairly flexible.

This nest was situated in a small depression on the grassy southerly slope of the hill. The slope is liberally strewn with rock and loose stone. The hill is lightly timbered—principally with Peppermint (*E. amygdalina*), Casuarina (She-oak), Acacia (Wattle and Blackwood), and Dogwood (*Bedfordia salicina*), which is called Blanket-leaf Tree in Victoria. At the foot of the slope Melaleuca makes a dense scrub, punctuated by the Swamp Gum (*E. ovata*). A large tuft of grass dominated the nest, which was built chiefly of native grasses, interwoven with small pieces of bark and leaves. Leaves and twigs resting upon it in keeping with the surroundings made the nest very difficult to distinguish, even at a distance of only a few feet. The opening was small and faced up the slope, while the interior was lined with leaves and bark which had apparently been shredded by the animals, making a very comfortable floor half an inch in thickness; this bark appears to be from the Stringy-bark tree and is evidently preferred by those animals. The nearest such tree (to the best of the writer's knowledge) was at least one mile distant. It cannot be confirmed that the animals brought the bark this distance, but Lord and Scott (p. 249) refer to a nest obtained by Mr. Adams which was made entirely from Stringy-bark carried for a quarter of a mile by the animals by means of the prehensile tail.

The writer released a further specimen of the Bettong from a rabbit trap some time ago. All of these animals closely approximated the animal illustrated in *Furred Animals of Australia* by

Ellis Troughton (p. 159). The Bettong lops in a similar manner to the wallaby. This feature is an aid in distinguishing the Bettong, in flight, from the Long-nosed Rat-Kangaroo (*Potorous tridactylus* Kerr 1792), which, using the forelegs in conjunction with the hind legs, moves in a kind of gallop. The latter animal is also somewhat more slender.

It may be of interest to note that the typical "thump, thump" of the kangaroo's movement distinguishes his more leisurely pace. When thoroughly startled he and his relatives move silently and speedily, the smaller animals carrying themselves so close to the ground that it is difficult to discern their exact movements.

A nest of the *Potorous* was found amongst undergrowth on the banks of the West Arm of the Tamar. This nest was situated at the foot of a Stringy-bark tree upon sandy soil, amongst large tussocks of grass and shrubs. The whole was overlain by a confusion of sticks, leaves and strips of bark, so that the animal traverses a corridor of two or three feet under cover to the true entrance of the nest. This nest consisted almost entirely of grass carried from the nearby orchard. Some leaves were used on the floor, while on each side of the structure loose earth was built up to a height of several inches. One animal only was there and, owing to the thick growth, was in sight for only a short time. However, its typical gait identified it as a specimen of *Potorous*. It must be noted also that the nests of *Potorous* and *Bettongia* differ somewhat in materials used, the former favouring grass, the latter bark. Choice of situation differs also. The site of the nest of the *Potorous* in this instance was kept damp for the most part by drainage and by the profuse foliage. Preference for this type of situation is noted by Lord and Scott (p. 251). On the other hand the Bettong, as already seen, appears to prefer a site more exposed to the sunlight on the outskirts of bushland.

A commonly seen animal in this locality, as elsewhere in Tasmania, is the Brush or Red-necked Wallaby (*Wallabia rufogrisea*, Desmarest 1817), generally known as a kangaroo in Tasmania. This animal was formerly known as Bennett's Wallaby. The true Tasmanian or Forester Kangaroo (*Macropus tasmaniensis*, Le Souef 1923), although almost extinct at one time, has recently been reported in increasing numbers in the Midlands of Tasmania and is a much larger animal than *W. rufogrisea*. The Brush Wallaby ranges extensively through brush and heath country and it is possible to follow "runs" for long distances. At night these animals make excursions into orchards and pasture land, and they frequently do considerable damage to crops. The writer has found a lair, or nest, in long grass beneath a low-branched apple tree in an orchard. For various reasons this had not been disturbed for some time and the animals evidently felt secure until the writer came upon the scene. During the late, dry, summer months the "roos" come into the garden. As many as six individuals have been disturbed on one occasion within a few yards of the dwelling. A lair was found within fifty yards. The animals obviously set up home according to the exigencies of the moment. They are a problem, for it is impossible to scare them away for more than a short time and difficult to keep them out. Open seasons give some measure of control.

As already mentioned, *W. rufogrisea* is known as a kangaroo colloquially, thus leaving the name "wallaby" for application to the Tasmanian, or Red-bellied, Pademelon (*Thylogale billardierii,* Desmarest 1822). However, there appears to be some confusion in this respect, for while the Pademelon is correctly referred to as a scrub wallaby, the writer has encountered the use of the name "pademelon" for the bandicoot (*Perameles gunnii,* Gray 1838) by some country people. The writer has seen only two specimens of the Pademelon, and those in dense scrub perhaps five miles from Kelso. Occasionally "wallabies" are seen. However, some of these could have been immature specimens of *W. rufogrisea.*

The Short-nosed Bandicoot (*Isodon obesulus,* Shaw and Nodder 1797) is common in this locality, although it was apparently scarce some years ago. It is said that it is necessary to catch all the bandicoots in an area before any rabbits may be trapped, and indeed, being frequently abroad in daylight, they do appear to reach the traps first too often. Farmers, aware of the good these animals do, release them carefully, but unfortunately a percentage die from internal injuries incurred during their violent struggles to escape, whilst most suffer some injury, more or less permanent, to limbs. The Tasmanian Barred Bandicoot (*Perameles gunnii*) has not been seen in this locality, but individuals have been noted within twelve miles.

The wombat (*Vombatus ursinus tasmaniensis,* Spencer and Kershaw 1910) is fairly common and entirely nocturnal. It displays an unfortunate tendency to rush across a road right in front of a passing vehicle. Several have been killed in this way in the last twelve month, and the writer was almost thrown from a bicycle by one such animal. All of the animals seen were dark brown, which is apparently typical of lowland wombats. Not long ago a rabbit burrow, situated in a pasture paddock, and from which the rabbits had only just been eradicated, was enlarged and occupied by wombats. The discovery was made when the writer approached to close the hole. Although it was not interfered with, the wombats abandoned it within a few weeks, possibly owing to the exposed situation. Upon the path which these animals would probably have followed when approaching the burrow to occupy it was found a very young specimen. This apparently had fallen from the pouch, for it was completely hairless and measured a scant four inches. It was dead when found.

Commonly to be seen is the Tasmanian or Dusky Brush-tailed Possum (*Trichosurus fuliginosus*, Ogilby 1831). Some of these animals leave the bush of an evening at dusk to make their way to the large trees adjacent to the writer's house. They appear to avoid travelling upon the ground unless absolutely necessary, making use of windbreaks of pine or gums and tea-tree. One individual came regularly to an almond tree, to approach which it is necessary to cover some thirty yards of open ground and garden. This he would do at a great rate to perch high in the almond tree till dark, before making any further move. The attraction in this instance appears to have been the nearby apple tree, for he did not come again following the removal of the apples.

Although these animals appear to go to a considerable trouble to remain aloft when moving at dusk or during the night, the writer's observations lead him to believe that they spend a good deal of time on the ground. They do not appear to move far from the trees without some incentive, but evidence of their passage is sometimes to be found many yards within the orchards. Damage to fruit, however, rarely appears to reach serious proportions.

Several specimens of the Tasmanian Spiny Anteater (*Tachyglosssus setosus*, Geoffrey 1803) have also been observed. These have all been seen during daylight hours, while some evidence of the passing of these animals has been noted at night. One of them was observed for some time at work on an ant hill the surface of which had been broken considerably, presumably by the animal. With the snout held close to the ground, the animal "snuffled" about, quickly snapping up any ants with its tongue—a fascinating scene.

There appears to be some ground for the belief that the very dry conditions which have been experienced in Tasmania from 1949 until the rains this year (1952) have resulted in an increase in the numbers of certain of the animals referred to in the present notes. This has undoubtedly been the case with the rabbit. The wallaby (*W. rufogrisea*) is now very common, as also is the bandicoot, while the writer has noted increasing evidence of the presence of wombats in greater numbers, particularly during the last twelve months. What effect the present bad weather (May, 1952) will have is still, of course, to be seen.

From the Soviet controlled zone of Germany comes a letter signed by Dr. Hans Sachtlchen of the Deuches Entomologisches Institut, congratulating Tarlton Rayment on his receipt of the Natural History Medallion, and praising the *Victorian Naturalist*, copies of which they are glad to add to their library. —L.Y.

NOTES ON SOME INSECTS ASSOCIATED WITH A LISBON LEMON TREE

By C. E. CHADWICK, Department of Agriculture, Sydney.

Between Christmas 1949 and New Year 1950 some casual observations were made on insects associated with a Lisbon lemon tree (*Citrus limonia* Osbeck) at Lismore, N.S.W. The tree had been attacked by several species of insects. These included four species of scale insects (Family *Coccidae*). The white wax scale (*Ceroplastes destructor* Newst.) was mostly found as tiny white specks (which under a lens showed an oval body with radiating arms) along the midrib, or as white, more or less hemispherical wax covered dots about the size of a pin's head on the smaller twigs. White louse scale (*Unaspis citri* (Comst.)) was found along the larger branches and on the trunk. The male scale, which gave a conspicuous white mottling to the trunk, was about 1/25th in. long and had three longitudinal ridges; the female insect was inconspicuous and dull brown, shaped somewhat like a mussel, and was about 1/10th inch long. The circular black scale (*Chrysomphalus ficus* Ash.) was found on leaves (especially on the lower surface) and on the fruit. A few specimens of *Saissetia coffeae* (Walk.), the hemispherical scale, had established themselves on leaves.

Adults of the spined citrus bug (*Biprorulus bibax* Bredd.), a shiny green insect with a sharp spine projecting from each side of the pronotum or shoulder, were several times observed with the proboscis inserted into fruits. The bronze orange bug (*Rhoecocoris sulciventris* (Stal)) was also in evidence. It could eject a particularly potent and objectionable fluid from its stink glands, which were found on the ventral surface of the metathorax, lateral to the second pair of legs.

A cockroach (*Periplaneta australasiae* (Fabr.)) was collected inside a house and, as a killing bottle was not available, it was placed in a small jar about 8 o'clock on the 24th, and was quite active next day. A spined citrus bug was placed in the jar the same morning (i.e., 25th), but its odour had no apparent ill-effects on the cockroach. At 1.15 p.m. another bug was added to the jar. A few minutes later a bronze orange bug, which had ejected scent when captured, was dropped into the jar. Within a very short time (perhaps only a couple of minutes) the cockroach was unquestionably dead. As the lethal effect of this natural killing agent had aroused some curiosity, a pair of fig leaf beetles (*Galerucella semipullata* (Clark)) were then added to the company; both were dead in 4½ minutes. The bronze orange bug appeared to be dead before 1.30 p.m., and by this time movement in the spined citrus bugs was limited to a twitching of the legs. A floury miller cicada (*Abricta curvicosta* Germ.) was then placed in the jar and was quietened down considerably by the effluvium, but the three bugs and the cicada had to a very large extent recovered from the anaesthetic next morning.

The following day (26th) at 5.40 p.m. a female floury miller was observed on a green twig. It had possibly only just started to oviposit. It was standing with the body slightly above the twig, the tip of the rostrum just touching the surface of the bark. While the ovipositor was inserted into the bark a regular pulsating movement was noticed in the segments posterior to the point of attachment of the ovipositor. Most of the time the insect was fairly close to the twig and the ovipositor was at an acute angle to the twig and to the body of the insect, but occasionally it raised itself so that the angle of the ovipositor would be about 45 degrees to the insect and to the twig.

Gradually the insect's work resulted in a white cut showing clearly along the green bark of the twig. It was still engaged in ovipositing at 6.30 p.m., but had gone at 6.40, leaving a white cut almost an inch in length. When examined under a lens the edges of the bark appeared to have been pushed apart and the woody tissue was obvious. Broken strands of the woody elements were clearly seen, in two breaks—about the middle of the cut and at the end where the cicada finished oviposition.

Later, when this twig was split open, the eggs were found to be the same colour as the wood and scarcely distinguishable with the naked eye. Two groups of eggs were found, one below each group of broken woody elements. The first group laid contained 35 eggs, the second 29. The eggs were in the wood between the pith and the bark, at an angle to the bark. They were banana-shaped, plain white, without ornamentation, 2 mm. in length, with a maximum width of .5 mm. The greatest depth of the eggs was 2.5 mm.

Male cicadas of this species produced a sound which was a mixture of at least two notes very close together. Those observed were resting either head up or head down on a limb or stem. The abdomen was raised when the sound was being emitted and lowered when the sound ceased. One insect was watched and noted to emit a series of short chirps, followed by a longer period of sound emission. The number of chirps varied from 10 to 41, but 12 to 14 was the commonest number. When emitting the short chirps before the prolonged burst, the intervals between the last few chirps were appreciably shorter. The long period of sound emission would vary from 7 to 10 seconds as a rule and, curiously enough, the sound emitted seemed to coincide with those of two other cicadas in another tree nearby. However, in other case noted the synchronization was much less perfect.

The sound-producing organs could be seen with a lens. The most conspicuous external structures associated with sound production were the dark brownish, more or less kidney-shaped opercula which are attached to the third thoracic segment between the legs and the pleura. Below each operculum was the ventral cavity, which contained the folded membrane and mirror. The folded membrane immediately underneath the operculum was more or less oval in shape and had a yellow border and a number of tiny ridges running at right angles to the longitudinal axis of the body. The mirror, at the posterior end of the ventral cavity, was semi-circular in shape, quite transparent, very thin, and had an iridescent sheen. The tympanum or timbal, which produced the sound, was situated in the lateral cavity and was most easily seen from a dorso-lateral viewpoint. The tympanum was rounded externally and bore a series of small, parallel ridges running at right angles to the longitudinal axis of the body. When the note was given out an extremely rapid movement was observed in the tympanum. The tympanum in the living insect was covered by three thicknesses of wing, viz., once by the forewing and twice by the hindwing, which was folded at the second anal vein.

When handled after feeding a male ejected a small volume of clear liquid from the tip of the body. A jet from each side of the body was squirted, not directly behind, but at an angle to the body, but the exact source of the jet could not be ascertained.

Quite a number of specimens of the black leafhopper *Desudaba psittacus* Walk. were found on the trunk and branches of the tree. Apparently they preferred to rest with the head downwards. When seen on the tree the insect was practically black, with conspicuous white eyes. The abdomen was mostly green, with obvious white spiracles. When the wings were opened the tips of the forewings were lighter than the rest of the wings, which were blackish; the hindwings had the distal half unpigmented, the anterior basal quarter reddish, and the posterior basal quarter blackish. The insect was quite prettily coloured when mounted to show the wing pattern. It was able to run sideways quite as rapidly as forwards, in fact it appeared to prefer the former method of progression. It could hop strongly, but always appeared to choose to run sideways to escape capture, in fact specimens observed seemed to hop only when forced to do so.

A few stem galls, no doubt those of *Eurytoma fellis* Gir., were found on small stems, but the original inhabitants appeared to have departed.

Immature forms of an assassin bug (almost certainly the bee-killer, *Pristhesancus papuensis* Stal) were observed moving stealthily among the leaves, with the antennae bent forward and downward at the distal end of the first antennal segment. One specimen had a small blackish ladybird impaled on its proboscis. Quite often a solitary greenish Dolichopodid fly was observed resting on a leaf, and a few Queensland fruit flies (*Dacus tryoni* (Frogg.)) were also seen. Odd adults of the small citrus butterfly *Papilio anactus* Macl., also the large citrus butterfly *P. aegeus aegeus* Don. and the common hover fly *Xanthogramma grandicornis* (Macq.) hovered around the tree also.

The small brown cockroach *Ellipsidion australe* Sauss., one of the few cockroaches which will stay in the sun, was also found on the tree, and several cockroach egg capsules, probably belonging to this species, were attached to the leaves.

Five species of ladybird beetle were seen on the tree. Odd specimens, both larvae and adults of the 20-spotted ladybird *Leis conformis* (Boisd.) were found crawling over the stems and leaves. One adult was seen eating the soft body under the scale of the circular black scale which it had overturned; when it had cleaned out the undersurface of the scale it ate the remains of the insect on the leaf. Some specimens of the mealy bug ladybird *Cryptolaemus montrouzieri* Muls., well-known as a predator on mealy bugs, were moving about on the tree. The black ladybird *Scymnodes lividigaster* Muls., and *Rhizobius ?hirtellus* Muls., a rather small hairy species with brownish head and prothorax and blackish wing covers, as well as a steel blue ladybird, *Orcus* sp., were also present.

Odd specimens of a green plant-hopper (probably *Siphanta acuta* (Walk.)) were sufficiently agile to escape capture. One Lagriid beetle was found on a leaf, while some specimens of a brown shield bug, *Poecilometis strigatus* Wwd., were present on the limbs.

Thus 24 species of insect were observed which appeared to have either a direct or an indirect effect on the tree. Of the eleven members of the order *Hemiptera,* the four scales and the bronzy and spined citrus bugs are well-known economic pests, the cicada, the two leaf-hoppers and the brown shield bug are sap suckers; the assassin bug, by destroying the ladybirds, would probably be doing more harm than good in the present case, so that in this particular example the order *Hemiptera* would appear to be entirely harmful to the tree.

On the other hand, of the six beetles five are definitely beneficial types but the habits of the Lagriid do not seem to be known.

Larvae of the two butterflies eat citrus leaves, and the gall wasp is a pest due to the galling it causes on the stems of the tree.

Of the flies, the Queensland fruit fly is a notorious pest, and the larva of the hover fly feeds on scales and aphids and must be considered beneficial. Dolichopodid flies are stated to be predaceous on small insects, but in this case no feeding of any kind was observed.

As the cockroach could not be regarded as either harmful or beneficial there would be fifteen harmful and six beneficial insects and three which could not with certainty be consigned to either category.

EAST GIPPSLAND FERNS

By N. A. WAKEFIELD

In October 1944, in this journal (61: 108), a review was made of all Fern and Clubmoss species then known to occur in East Gippsland. Three additional species, *Psilotum nudum*, *Lycopodium carolinianum* and *Cystopteris fragilis*, found subsequently in the district, were incorporated in "Victorian Fern and Clubmoss Records" (*Vic. Nat* 65: 215, 279) of January and April 1949. The notes presented hereunder bring the subject up to date.

Hymenophyllum peltatum: The Stalked Filmy Fern is abundant amongst granitic rocks and in the heads of Sassafras gullies at Mount Ellery, at about 4,000 feet. (J. H. Willis and N.A.W., 30/12/1951.) This is an additional record for East Gippsland.

Doodia aspera: The Rasp Fern, though abundant farther east, apparently does not occur west of the Bemm River. Baron von Mueller reported it from the Snowy River, but the specimens were of *D. media*.

Lindsaya microphylla: The Lace Fern grows also on granitic slopes of ranges east of Chandler's Creek in the upper Cann River valley. (N.A.W., 5/11/1950.) The record is of particular interest, for the habitat is natural; whereas the two previously reported Victorian occurrences applied to plants appearing where man's hand had produced somewhat artificial conditions. (See *Vic. Nat.* 57: 162 and 62: 126.)

The recorded *Pteridophyta of* East Gippsland now totals 87 species, 13 of which do not occur elsewhere in Victoria.

BRITTANIA CREEK FLORA

(Week-end Camp, April 25-27, 1952)

The country surrounding Brittania Creek has been ravaged by forest fires. The steep mountain sides are now covered with bracken, and in places groups of the Rough Tree Fern, *Cyathea australis*, survivors of the fires, have redressed themselves with long, graceful green fronds.

When strolling along the mountain top, we passed through occasional groves of White Mountain Ash, *Eucalyptus regnans*. The dormant seed has generated since the fires, and the trees are now 30 to 40 feet in height, their tall, unbranched, slender trunks and overhead foliage, filtering the light, bring to mind the cloistered interior of a cathedral.

At the back of the Melbourne Women's Walking Club hut, the mountainside was untouched by fire: Silvertop (*E. sieberiana*), Messmate (*E. obliqua*) and an undergrowth of *Acacia diffusa*, showing early flowers, Grey Everlasting (*Helichrysum obcordatum*), Mountain Correa (*Correa lawrenciana*) and Large Mock Olive (*Notelaea longifolia*) gave shade and cover for the lyrebirds and other forest denizens.

Brittania Creek and the mountain slopes on the north side were untouched by fire. The creek bed is thickly clothed with Silver Wattle (*Acacia dealbata*), Blackwoods (*Acacia melanoxylon*), huge hoary Myrtle-beeches (*Nothofagus cunninghamii*) and Pomaderris sp., in places these plants were strung together by the Wonga Vine (*Pandorea pandorana*): growing in the shade were the Soft Treefern (*Dicksonia antarctica*, *Pultenaea* sp.), Tall Rice-flower (*Pimelea ligustrina*), Tough Rice-flower (*Pimelea axiflora*), Burgan (*Kunzea peduncularis*), Rough Coprosma (*Coprosma hirtella*), White Elderberry (*Sambucus gaudichaudiana*), Musk Daisy-bush (*Olearia argophylla*) and Derwent Speedwell (*Veronica derwentia*). In open places, the Forest Hound's-tongue (*Cynoglossum latifolium*) with its small pale blue flowers formed huge patches of colour.

On dry banks along the creek road, plants of the Balm Mint-bush (*Prostanthera melissifolia*) still showed a few racemes of lilac flowers.

K. W. ATKINS.

"FLOWERING TREES OF THE CARIBBEAN"

(Book Review)

"One day in Rome early in the twelfth century, an Italian nobleman, taking time off from his official duties as bread-breaker of the Holy Sacrament to pursue his hobby, combined a number of volatile oils and pronounced the result his most tantalizing perfume. It proved to be a sure fire formula and one that not only brought wealth to its makers, but fixed the inventor's name, which he had given the perfume, in the vocabularies of many nations. The man's name was Frangipani.

"The noble ladies of Europe, including the formidable Catharine de Medici, whose favourite it was, used the perfume called Frangipani for nearly four centuries before the discovery of the western hemisphere. It was a popular and easily recognized scent, and one that was quickly recalled to the early European settlers in the Caribbean area by the fragrance of a tree they found growing there. That they identified the sweet-smelling flowers of this particular tree with a famous perfume of their homeland is the most persistent explanation of why the *Plumerias* are called Frangipani." So read the opening paragraphs of *Flowering Trees of the Caribbean*, a copy of which has just been received by us from —the publishers, Rinehart and Company (New York and Toronto, unpriced).

It must surely be unique for a book on natural history to be conceived in a bomber plane on active service, and produced by a shipping company. Yet such was the origin of one of the nicest publications of its kind we have seen, both as regards popular presentation and technical accuracy. One hundred and twenty-five pages, 12 by 9 inches, include thirty full-page delightful colour reproductions of flower and foliage from such trees as *Spathodea*, *Cassia fistula*, Jacaranda, the *Tabebuias*, Flamboyant, *Lagerstroemia speciosa*, Erythrinas, *Gliricidia*, *Brownea* and the Frangipanis. The artists are Bernard and Harriet Pertchik.

The story of these trees, which have been selected as representing the cream of tropical and sub-tropical species as they occur in nature, is the work of many botanists, horticulturists and foresters, co-opted under the versatile editorship of Alcoa Steamship Company's officer Paul Knapp. A vast amount of historical, geographic, economic and cultural information, together with quaint legend and lore, is very well presented. The Bibliography lists no fewer than 143 works, and there is a glossary.

A book such as this not only deserves a place in any tree-lover's library, but is at once a sharp reminder of the wealth of like material in this country calling for author and publisher to tell of, and tell not only the world at large but our own people also, who too often, it must be confessed, are wholly ignorant of Australia's rich indigenous flora. Surely such flowering trees as Firewheel-tree and Waratahs, Acacias and Banksias, compare favourably with those found anywhere else in the world. What grander medium of advertising our own flora than a publication such as *Flowering Trees of the Caribbean*?

—E. E. Lord.

CATS AND ANTS

THE ANT-EATER.—Here in Auckland small brown ants run up and down my wire clothes-lines in hundreds. When the clothes are hung out, I go along the lines crushing the insects with a cloth, which I then throw down. My cat runs up, rolls on the cloth, and is quite crazy until he has licked up all the ants. Why should they attract him? Do other cats behave in this fashion?—J. Malone, New Zealand, *The Countryman*, Spring, 1952.

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PROCEEDINGS

The monthly meeting of the Club was held at the National Herbarium on December 8, 1952, with Dr. Chattaway in the chair, and about 180 members and visitors present.

Messrs. H. A. Watts and R. Parkin were elected to ordinary membership, and welcomed by the President.

Dr. R. T. Patton delivered a most interesting lecture on the ecology of the Bogong High Plains, illustrating its geology and botany with a series of graphic lantern slides. Numerous questions were asked by members and ably answered by the speaker, whom Dr. Chattaway then thanked on behalf of the Club.

Mr. K. Atkins reported that the Christmas excursionists to Mount Buffalo would travel by train; and Mr. Geo. Coghill observed that he was a participant in the first Club excursion to that area, 50 years ago.

Mr. A. A. Baker commented on an aspect of Dr. Patton's lecture—the influence of man on nature; and, in discussing his exhibits, brought out the point that the geologically interesting Clifton Hill quarries were being filled by the dumping of rubbish.

Dr. Chattaway announced Miss J. Raff's donation to the Club library of the book "Natural History in Zoological Gardens" by F. E. Beddard.

At the adjournment of the meeting the President cordially wished members a Happy Christmas.

EXHIBITS

BOTANY.—*Doryanthes palmeri* (Giant Spear Lily)—Mr. Atkins. Garden-grown native plants—Mr. Seaton.

SHELLS.—Clam Shells from New Hebrides—Miss E. Raff.

GEOLOGY.—Zeolites and Carbonates from the Collingwood Quarry—Mr. Baker.

ZOOLOGY.—Baby Black Snake from Healesville district—Mr. McQueen.

MISCELLANEOUS.—Photographs of Fungi—Miss Carberry. Paintings of orchids found at Woodend—Mrs. McQueen. Hair combs and necklace made and worn by natives of New Hebrides—Miss E. Raff.

WARRANDYTE GOLD

When I chatted with an elderly resident of Warrandyte whose background was steeped in gold lore, and whose father supervised the cutting of the Pound Bend tunnel, he expressed the opinion that far more gold had been obtained from the Warrandyte district than is commonly supposed.

He stated that alluvial gold worth one million pounds had been obtained, and that the Caledonian mine alone had produced forty thousand ounces of gold. On the other hand forty tons of ore crushed from the Fourth Hill Tunnel yielded only half an ounce to the ton, while mines at "Golden Point" where the memorial cairn is situated were stated to have produced good workable gold. Have any other readers information on this subject?

—A.E.B.

THE MITCHELL RIVER GORGE

By K. W. Atkins

During December 1951, three members of the Club—W. Day, E. Dakin and myself—visited the Mitchell River Gorge, about 175 miles east of Melbourne. The gorge extends over a distance of 13 miles, as the crow flies, from Tabberabbera in the north, southward to the Glenaladale flats which are about 15 miles north-west of Bairnsdale. (See locality plan.)

At 2 p.m. we alighted from the train at Lindenow South, and by sunset were camped by the ruins of the Glenaladale weir. This structure was erected some 65 years ago to supply Bairnsdale with water and to irrigate the intervening country. It was wholly constructed of huge blocks of silicious freestone secured from a quarry on the western side of the river.

Next morning we arose early for the hike to Deadcock Creek, a distance of two miles. At first it was easy going through open eucalypt country, but the latter half of the journey was notable for a myrtaceous shrub, *Kunzea peduncularis*, which soon became thick and a solid front of its willowy branches barred our way. The task was hot, slow and vexing as we literally "bulldozed" our way through the high tangled growth. (This shrub is causing considerable alarm in the Bairnsdale district, as it is rapidly taking possession of grazing areas.)

When the gorge made a dramatic appearance through this dense growth, a thankful party stood on its brink and gazed down on the Mitchell River, a silver gleam flowing between Kanooka-lined banks six hundred feet below.

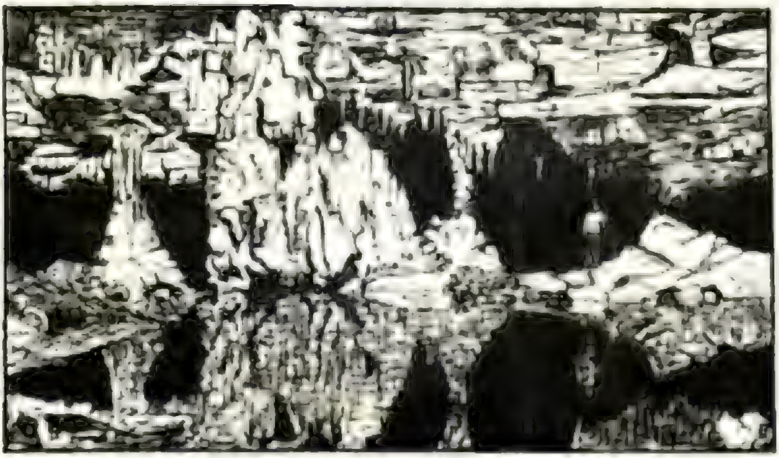
After finding a track down to the river, we wended our way up the bed of Deadcock Creek. Two hundred yards upstream from its confluence with the river, this creek has an impressive magnificence. From wall to wall of the gorge is a rock ledge. 30 feet wide and 20 feet high, over which the creek falls. For the first hundred feet the gorge walls are a shining rose-pink, due to a well-developed iron oxide varnish, and consist of silicious sandstones of sedimentary character, with well-developed vertical joint planes. On this rest the rising walls of conglomerates, mudstones and shales, with trees perched perilously on abrupt ledges, clutching scant footholds while huge overhanging abutments seem likely to crash down upon one, in the creekbed.

We camped, during our stay, in a large cavern under the left-hand bank. This cavity is roofed by an overhanging ledge, 30 to 40 feet wide and 20 feet high, which extends for 150 feet upstream before making a sharp turn and finishing under the waterfall.

Eagerly we made journeys of exploration. Our first was to the "Nargun's Cave", reached by walking upstream along the boulder-strewn creek bed. At our approach, "Gippsland Crocodiles", a type of water-lizard, slithered into the occasional pools. Huge buttressed Kanookas of fantastic shapes sprawled across the creek bed, each hoary giant clothed with brownish-green moss and with Kangaroo Fern creeping for yards along the branches. The silver-grey lichen, *Usnea angulata*, of fascinating appearance, grew here and there in large conspicuous festoons.

Glorious in these gorges are the lianas—Scrambling Lily, Twining Silkpod, Stalked Doubah, Jasmin Morinda and Wonga-vine—scrambling everywhere along the creek bed, their roots and stems forming contorted loops, entangling and stringing together the Lilly-pilly, Blackwood, Mock-olive and Pittosporum.

At the Nargun's Cave there is a perfect cul-de-sac,, with a great overhanging rock ledge stretching from wall to wall of the gorge. To one side great stalactitic masses form a curtain of limestone from the ledge above to the margin of a great pool below. The outer face is streaked with orange owing to the action of a lime-loving alga, and behind the curtain are pools of lime-impregnated water containing leaves and twigs in various stages of petrification. Small stalactites, many four inches in length, stud the cave roof, and on the floor are corresponding stalagmites up to a foot in height.



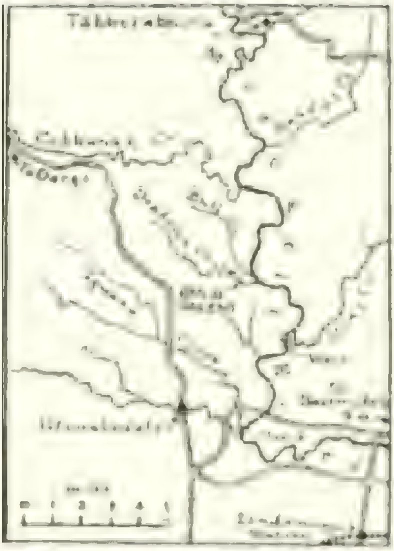
Den of the Nargun—as seen by the editor, in 1947.

[A similar drawing, made by Howitt nearly 80 years ago, was figured in the *Vict. Nat.* of August 1923 (40: 79). Comparison of the two sketches shows perhaps the most remarkable change that has taken place over the years. In Howitt's day there were but two comparatively slender stalactitic pillars from roof to floor of the cavern; but since then, the whole of the central mass has been deposited and an additional column has been added on the left side.]

According to aborigines of the Mitchell Valley, this was the "ngrung a narguna", the den of the nargun, a being half stone and half human. It was said to turn back a spear or bullet so as to injure the attacker, and that it was fond of blackfellow as a diet.

The contorted and interlaced Kanooka branches made journeys along the river banks very arduous, and had often to be removed to make a pathway. Higher up the steep banks, prickly stems of Bursaria and Austral Sarsaparilla, and masses of stinging nettles, drove us many times back to the water's edge.

The gravelly river banks were covered with Black Wattle, Tantoon, Woolly Tea-tree and Plum-leaf Pomaderris. The only sandbank in the vicinity featured the Blue Olive-berry, Common Fringe-myrtle, Prickly Beard-heath, Swamp Paper-bark, Prickly Geebung and the Narrow-leaf and Hazel Pomaderris.



On one of the huge silt banks we found the uncommon native poppy, Papaver aculeatum, a plant two feet high with rough silver-grey foliage and inch-wide orange-red flowers. In this region, apparently so suitable, no epiphytic orchards occur*, and only one terrestrial, *Gastrodia sesamoides*, the Cinnamon Bells, was found.

Bird life was limited in quantity and variety; Currawongs called frequently, and occasionally the raucous cries of Cockatoos floated down from above the gorge. Many times I gazed at the Eastern Whip-birds which, unlike the same species in the Dandenongs, do not remain hidden here. A pair were apparently nesting in a patch of Kanooka and scrub, which we frequented, and they often entertained us vocally from a few feet above our heads.

On returning from one of our exploratory excursions, we found that visitors to the camp had, during our absence, left a jar containing the "visitors' book". Some pertinent extracts therefrom are:

> As the custom of wall-writing is abhorred by two of this trio, a visitors' book is here provided as a substitute. Signed: Flora McDonald, Joan Anderson, M. Elizabeth Williams.

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*[The Butterfly Orchid, *Sarcochilus australis*, is known to occur in the gorge area, at Iguana Creek.—Ed.]

> First visit by white man, Howitt's party; the Nargun's Cave rediscovered in 1904 by Tom and Dick Morrison, Charlie Booth and the writer.

The "writer" was L. D. Porteous, who apparently visited the area many times from 1904 to 1919, and again in 1929, 1934 and 1949. One of his later entries reads:

> The chief change is in regard to the present lack of birds; it was once the habitat of many lyrebirds and bell-bird colonies, with wombats (still in evidence), rock wallabies and snakes making up the common fauna.

E. Grace Du Vé, whose first visit was during the 1920's, later recorded that:

> A very noticeable point of change during the last few years, apart from the departure of the bell-birds, is the prodigious growth of Manuka, the scrub on the approaches to the slip-rails above the gorge.

The plant referred to is not "Manuka" but the Burgan (*Kunzea peduncularis*) already mentioned early in this article.

The first white man's visit, referred to by Porteus, was that of Alfred William Howitt in the 1870's. He travelled with two native friends—Turnmile, a muscular active young black whose name meant "one who swaggers", and Bungil Bottle, an older man noted for his extraordinary length of leg. The three travelled from Tabberabbera down the Mitchell in two flimsy aboriginal bark canoes. Howitt was the first aboard, stepping gingerly into the larger vessel, where he sat carefully down upon a piece of bark respectfully provided for his comfort. Bungil Bottle came aboard with equal caution, folding himself up in a manner suggesting that he had several unusual joints. Then Turnmile launched his craft. The journey was interrupted frequently by cascades, and while the white man clambered over rugged cliffs, the natives either coaxed their frail craft through the turbulent waters or carried the vessels on their heads. On the second day, Turnmile's canoe was wrecked on a hidden rock, so Howitt decided to finish the journey overland.

Our holiday over, we regretfully departed for civilization, and comfortable beds; but some day we shall return to this small patch of unspoiled wilderness. Our most vivid memory perhaps is of the Currajong trees seventy feet or more high and with trunks measuring over fifteen feet in girth.

REFERENCES.

Croll, R. H., *Melbourne Walker*, 13: 13.
Easton, J. G., *Mining and Geological Journal*, July 1938, p. 73.
Thomas, F. J., *Vict. Nat.*, 28: 199.
Green, H., *Vict. Nat.*, 40: 77.
Daley, C., *Vict. Nat.*, 43: 298.

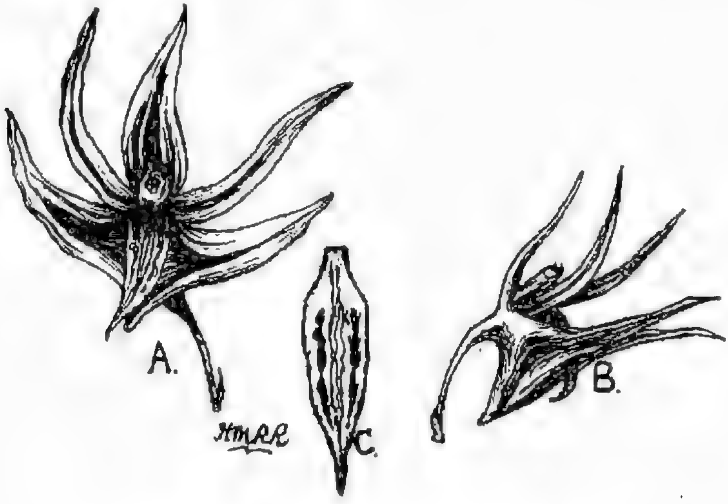
NOTES ON AUSTRALIAN ORCHIDS

By the Rev. H. M. R. Rupp, Willoughby, N.S.W.

I. A New Species of *Dendrobium* from North Queensland.

D. ELOBATUM, sp. nov.

Planta robusta; pseudobulbis pluribus, usque ad 60 cm. altis, prope medium c. 16 mm. latis. Folia ovata, inaequaliter emarginata, 5-6 cm. longa, 3 cm. lata, praeter pseudobulbum alterna. Flores racemosi, comparate parvi, pallentes cum vittis longitudinalibus fuscorubris. Sepalum dorsale c. 16 mm. longum, ad basin 6 mm. latum, acuminatum. Sepala lateralia paulum longiora, cum columnae pede calcar magnum obtusum formantia; calcar ad basin 1 cm. latum. Petala angusta, 2 cm. longa. Labellum brevius quam sepala, elobatum, *brevissime unguiculatum, c. 13 mm. longum, ad basin aliquanto angustum, prope medium 5 mm. latum, acuminatum, rigidum, maculosum. Columna 10 mm. longa, utrinque alata; alae supra projectae. Stigma late oblongum.*



DENDROBIUM ELOBATUM, sp. nov.

A—a flower from the front, x 1½
B—a flower from the side, x 1¼
C—labellum from the front, x 2½

A robust plant with several pseudobulbs up to 60 cm. high, and about 15 mm. wide near the middle. Leaves ovate, unequally emarginate, 5-6 cm. long, 3 cm. wide, alternate along the greater part of the pseudobulb, coriaceous. Flowers racemose, not large, pale green or whitish with red-brown longitudinal bands. Dorsal sepal about 16 mm. long, 6 mm. wide at the base, acuminate.

Lateral sepals a little longer, with the foot of the column forming a large obtuse spur 1 cm. wide at its base. Petals narrow, quite 2 cm. long. Labellum shorter than the sepals, *lobeless*, very shortly clawed, about 13 mm. long, rather narrow at the base but widening to 5 mm. about the middle, acuminate, somewhat rigid, blotched with reddish or purplish brown, the longitudinal ridges of the disc obscure. Column 10 mm. long, winged on either side, the wings projecting above as high as the anther. Stigma broadly oblong.

Growing on *Wormia alata* in the mangrove scrubs of Trinity Bay, Cairns district, N. Queensland (*leg.* S. F. Goessling-St. Cloud, August 1952—TYPE, in NSW).

This new species is very distinctive. The plant itself somewhat resembles a small *D. undulatum*, but the flowers are unlike those of any other known Australian Dendrobe. The perianth segments, though narrow and rather long, show no tendency towards undulation or twisting, as in *D. undulatum*, *D. superbiens*, *D. Johannis* and other North Queensland species. The labellum is quite devoid of lateral lobes. Mr. St. Cloud calls attention to the unusual colouring of the veins of the cauline leaf-bracts, and, on a smaller scale, those subtending the flowers. The bracts themselves are pale lilac, the veins deep lilac throughout. Four plants were discovered; they were not growing on the mangroves, but were about 16 feet up on *Wormia alata*, locally known as Swamp Mahogany.

II. *Pterostylis furcata* Lindl.

In the *Victorian Naturalist*, Vol. 65, March 1949, the late W. H. Nicholls described and figured this species as "an elusive orchid", from Tasmania. Subsequently he published a supplementary article, also illustrated (ibid. 66, April 1950). The present writer, during a residence of three years in Tasmania, frequently found what he believed to be Lindley's species, but it was very unlike the plant shown in Nicholls's first article. His figure in his second article is much more like the plant I knew. But there was already existing, in my opinion, an admirable plate of *P. furcata* accompanying an article by the late Dr. R. S. Rogers in *Proc. Roy. Soc. Victoria* 28 (n.s.), 1915. Curiously, Nicholls must have missed this article, for he does not mention it. The plate was drawn by the late Miss Fiveash, and it depicts Lindley's species exactly as I knew it in Tasmania, and as it was collected there some years later by Mrs. P. R. Messmer. Nicholls alludes to the action of E. D. Hatch and the present writer in referring Hooker's New Zealand *P. micromega* to Lindley's species. I received New Zealand specimens at that time which might have served as models for Miss Fiveash's plate. The Russell River plants, collected by Atkinson and figured by

Nicholls in his first article, appear to me to constitute a very distinct and unusual variety, with smaller flowers, more filiform point to the lateral sepals, and a very different curvature of the labellum.

III. *Thelymitra purpurata* Rupp in *Proc. Linn. Soc. N.S.W.* 70: 288 (1946).

In Part I of his splendid (but, alas! posthumous) work on the *Orchids of Australia*, the late W. H. Nicholls, without any explanation, gives this as a synonym of *T. ixioides* Sw. I am quite unable to accept his opinion on this point, and in maintaining the specific rank of *T. purpurata* I am supported by competent and careful observers in New South Wales and Queensland who have collected and examined specimens. I have nothing to add to the description and drawings in the paper cited above, except to say that the known range of the plant now extends northward to Maryborough in Queensland (W. W. Abell), and southward to Nabiac in New South Wales (L. Gilbert).

IV. DISTRIBUTION OF VARIOUS SPECIES:

(a) *Thelymitra truncata* Rogers. Woodford, Blue Mountains, N.S.W., Miss I. Bowden, 10/1950. First record for N.S.W. This is another species which the late W. H. Nicholls considered to be merely a variety of *T. ixioides*; but I have always regarded it as a valid species. Miss Bowden's specimens agree perfectly with some received from the late Dr. Rogers, collected in South Australia.

(b) *Thelymitra luteocilium* R. D. Fitzg. Woodford, N.S.W. Miss I. Bowden, 11/1950. Previously only recorded from South Australia and Victoria.

(c) *Thelymitra chasmogama* Rogers. Castlecrag, N.S.W. Mrs. Marjory Loader, 10/1950.

(d) *Microtis bipulvinaris* Nich. Jannali, near George's River, N.S.W. Miss I. Bowden, 8/1950. New for N.S.W.

(e) *Prasophyllum striatum* R.Br. Dapto, S. Coast, N.S.W. R. O'Meley, 5/1952. Most southerly record known.

(f) *Prasophyllum plumosum* Rupp. The Pyramids, Stanthorpe, Queensland. Miss J. Gemmell, 3/1951. A surprising discovery, as the species was known previously only from the environs of Sydney.

(g) *Spiculaea huntiana* (F. Muell.) Schltr. Mt. Victoria, Blue Mountains, N.S.W. Miss I. Bowden, 2/1951. This interesting little orchid had not been found in N.S.W. for many years; Miss Bowden reported it as fairly plentiful near Mt. Victoria.

(h) *Caladenia filamentosa* R.Br. Near Campbelltown, N.S.W. K. Bursill, 9/1950; Abercrombie Caves, N.S.W., K. Mair, 10/1951; Harvey Ra., Centr. Western Slopes, N.S.W., G. Althofer, 10/1951. Not previously recorded from any of these areas.

(i) *Pterostylis alpina* Rogers. Point Lookout, at the head of the Macleay River, N.S.W. F. Fordham, 1/1951. Another surprising record, the species not having been reported previously north of Kosciusko.

(j) *Pterostylis hildae* Nich. Originally believed to be confined to southern Queensland and the extreme N. of N.S.W., this species is now known to have a much more extensive range. The following records have not previously been published:—Terrigal, N.S.W., Miss I. Bowden, 9/1948; Mt. Kembla, S. Coast, N.S.W., W. Schmidt, 8/1950; Dapto, N.S.W., R. O'Meley, 8/1950; Springbrook, Q., W. W. Abell, 8/1949; Ku-ring-gai Chase, N.S.W., Dr. Melville and party, 8/1952.

(k) *Pterostylis daintreana* F. Muell. Another species the known range of which has been widely extended. New records: Granite near Stanthorpe, Q., Miss J. Gemmell, 4/1952; Khyber Pass near Rylstone, N.S.W., G. Althofer, 5/1952; Dapto, N.S.W., R. O'Meley, 5/1952.

(l) *Pterostylis barbata* Lindl. Abercrombie Caves, N.S.W. K. Mair, 10/1951. [See Rupp, *Orch. N.S.W.* (1943), p. 101.]

(m) *Dendrobium delicatum* F. M. Bail. Mt. Nullum, near Murwillumbah, N.S.W. J. Leaver, 9/1950; Ranges near Wauchope, N.S.W., Osborne, 1951. First records for this State.

(n) *Phreatia robusta* Rogers. Babinda, N. Queensland. Wilkie and Loader 8/1952. This remarkable species is a giant in the genus, which consists for the most part of very diminutive plants. The minute flowers of *P. robusta* are no larger than those of its relatives, but the plant itself, with its large leaves arranged like a fan, is quite attractive. The new record is more definite than the previous vague one, "near Cairns"

(o) *Acriopsis nelsoniana* F. M. Bail. in *Q. Agr. J.* 2: 160 (1898). Bailey described this as a New Guinea plant. In 1946 W. W. Mason junr. sent down a plant, without flowers, which appeared to be a species of *Acriopsis*, a genus hitherto unknown in Australia. Flowering specimens followed later in the year, and the plant proved to be *A. nelsoniana*, which Bailey had described from the Gira River in New Guinea, and which occurs also in the Solomon Islands. In September 1952, Mr. A. Pearson collected this species on the Daintree River.

(p) *Rhinerhiza divitiflora* (F. Muell.) Rupp. [*Sarcochilus divitiflorus* F. Muell.] Atherton tableland, N. Queensland, between Ravenshoe and Millaa Millaa, Mrs. Eunice Kirkwood. Previously this remarkable orchid had not been seen farther north than the vicinity of Maryborough (Q.).

(q) *Sarcochilus hartmannii* F. Muell. Upper Macleay River, N.S.W., J. Leaver 1952. Not known previously S. of the Richmond R.

(r) *Sarcochilus spathulatus* Rogers. Sugarloaf Range, S.W. of Newcastle, N.S.W., E. Todd 9/1951 Not previously known south of the foothills of Barrington Tops, N.S.W.

(s) *Chiloschista phyllorhiza* (F. Muell.) Schltr. Yarrabah, N Queensland, Mrs. P. R. Messmer 8/1952. Most southerly record.

(t) *Malaxis xanthochila* (Schltr.) n. comb. [*M. sordida* J. J. Sm.; *Microstylis xanthochila* Schltr.]. Bellenden Ker Range, N. Queensland, J. Wilkie, 1951. First record of this plant for Australia; previously known only in New Guinea.

EXCURSION TO BERWICK – BEACONSFIELD

About 50 members and friends attended the Club's excursion to the above region on 1st November. Good weather favoured the outing and an enjoyable day was experienced. The Berwick district with its hilly landscapes shown under their mantle of colourful Spring, presented a general spectacle of vivid green with fields marked out by hedges of deeper hue. Interspersed were trees and shrubs of yellow and other shades, and the various views were likened by a lady from the homeland as resembling certain localities in England seen under similar seasonal conditions.

About 45 species of birds were met with but a very wet season seems to have contributed to the absence of several migratory species which are usually found in the locality at this time of the year. In particular we missed the White-winged Triller, the White-browed Woodswallow and the Rufous Songlark.

Wild flowers were plentiful and in some places made a good display The flowering swamp tea-tree (*Leptospermum lanigerum*) was very showy along the margins of the Cardinia Creek. The flood waters of this stream prevented us from visiting the territory of the Helmeted Honeyeater, and in consequence we did not see a single specimen of this lovely bird.

In the late afternoon we paid a visit to a renowned "orchid plot" where thousands of the beautiful Purple Diuris (*D. punctata*) were found to be in full bloom—some heads having as many as five blooms on the one stalk. Members felt that they were amply rewarded for the time and effort spent in making this unexpected deviation.

—*A.S.C.*

FUNNEL WEB SPIDERS WANTED

From Mr. Melbourne Ward, of Medlow Bath, N.S.W., comes a request to readers for specimens of spiders, particularly of the Funnel Web group, *Mygalomorphæ*. In return an offer is made of collections of Blue Mountains insects, reptiles and spiders, or of identification work on spiders.

A TRAP FOR BEES

By Tarlton Rayment, F.R.Z.S.

One of the many surprising methods used by spiders to capture their prey is that of a greenish spider known as *Diaea rosea.* It is a smallish species, with a more or less spherical body, and rather long legs well adapted for making a sudden rush forward. In spite of the specific name, which means of a rosy colour, these arachnids actually showed more green than red.

At Cranbourne, Victoria, on 23rd October, 1952, one of our Club members, Herbert P. Dickens, observed the behaviour of several of these spiders on the white flowers of the Shasta Daisy. The habits of several specimens were compared, and it was found that all conformed to a common pattern.

On several other flowers in the vicinity, were very much smaller spiders, which appeared to be of the same species. These diminutive forms were not critically examined, but it was suspected that they were the males, for it is a rule among the arachnids for the males to be much smaller than the females.

It is very doubtful whether any other spider obtains her prey with less effort, and so little danger.

The female spider pulls down and in towards the centre of the flower four petals, one after another, and fastens them in position with strands of silk to form a kind of camouflaged hood. She then retires beneath this floral dome, and quite hidden from the world awaits patiently the arrival of her victim.

She does not, however, have to lie in wait very long, for in a few minutes an industrious honey-bee will assuredly alight on the daisy to collect the harvest of pollen and honey from the golden treasury of the capitulum.

Utterly unaware of her proximity to violent death, the unsuspecting bee plunges her head into the florets. The spider suddenly darts out from her camouflaged shelter and seizes the bee with her needle-like poison-fangs. There is no dramatic death-struggle, for the honey-gatherer is evidently instantly immobilized by the poison. The bee is taken utterly by surprise; the spider leisurely loops a few strands of silk about the corpse to anchor it to the flower, and there it remains until the spider's appetite tells her it is time to enjoy the meal so easily obtained.

PLANTS WITH RESTRICTED HABITATS

Plants which occur naturally in very limited areas are not usually hardy enough to do well in new areas where the climatic conditions are necessarily different. An example of this is the Rosy Bush-pea (*Pultenaea sub-alpina*) which is found only on the summits of Mount Rosea and Mount William in the Grampians, and which has proved difficult to grow under garden conditions.

Cootamundra Wattle (*Acacia baileyana*) provides an exception to this rule. Although this plant occurs naturally only around Cootamundra and Wagga in New South Wales, not only has it responded readily to cultivation in Victoria, but it is spreading freely from garden specimens into our bushland. A very welcome introduction it is, too, because of its beautiful display during the winter months when most acacias have yet to come into bloom.

—A.E.B.

WHAT, WHERE AND WHEN

General Excursions:

Saturday, January 17—Walk from Olinda to Kallista. Subject: Botany. Leaders: Botany Group. Take 9.18 a.m. Upper Fern Tree Gully train, then bus to Olinda. Bring one meal.

Saturday, January 31—200 mile parlor coach excursion to Loch River and Noojee, via Warburton, Moe, McVeigh's Road; return to Melbourne through Warragul. Coach leaves Batman Avenue 8 a.m., returning approximately 8 p.m. Bring two meals. Bookings, 24/-, with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Saturday, February 7—Metropolitan Golf Links, Oakleigh. Subject: World-famed Scarlet Flowering Gum. Take 1.35 p.m. Oakleigh train from Flinders Street, then bus to Golf Links: party meets there at 2.30 p.m.

Preliminary Notice:

Saturday, March 7—Evening parlor coach excursion to Healesville Sanctuary. Coach leaves Batman Avenue 2.30 p.m., returns 10.30 p.m. Bring a torch and one meal. Bookings, 15/-, with K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Group Fixtures, at Royal Society's Hall

Tuesday, February 3—Geology Discussion Group. Subject: "Holiday Reminiscences".

A NOTE FROM BRAZIL

Several interesting items emerge from a copy of "The Bee World" 1951, just to hand. In an article "Stingless Bees and their Study" by Dr. P. Nogueira-Neto, of Sao Paulo University, Brazil, S. America, the author acknowledges receipt of the *Victorian Naturalist* (1932) and writes, "T. Rayment gave a very useful account of the Stingless Bees of Australia. His comparative study of Apis and Trigona is the most important paper written on the bionomics of the Meliponins belonging to the general Indo-Pacific Area". Note how far the "Naturalist" travels, and the value of the articles published. The Stingless Bees, Meliponins, are fine pollinators, visting some flowers that are not sought by the honey bees. Research is proceeding to use them for the pollination of plants grown in greenhouses. Dr. P. Nogueira-Neto has designed two rational hives for them. —L.Y.

ANDERSON'S CREEK

There are at least two things of note about Anderson's Creek which has its source about two miles north of Ringwood and flows into the Yarra River near Pound Bend.

This stream is believed to have captured a tributary from the Dandenong Creek by deepening its valley, and so cutting its way back until it met the tributary which then commenced to flow into Anderson's Creek.

The first reported discovery of gold in Victoria, for which a reward of two hundred guineas was paid to L. J. Michelle, was from Anderson's Creek. At the spot where the gold was found, which was known in the mining days as "Golden Point", a stone memorial cairn has been erected by the Warrandyte Women's Auxiliary.

Incidentally, in the early days Warrandyte was known as Anderson's Creek. —A.E.B.

Start Your Children Right

All parents will agree that every child should be trained in a proper appreciation of the value of money. A sane money-sense is one of the most helpful factors in the building of a successful career.

For this reason children should be encouraged to make good use of their money boxes. Steady saving will develop traits of character that will make for security, happiness, and contentment in later life.

Teach Them to Save

THE STATE SAVINGS BANK OF VICTORIA

"The Bank for You and Your Family"

EXHIBITS AT JANUARY MEETING

FLOWERS: Garden grown native flowers—Mr. J. S. Seaton, Mr. A. E. Brooks.

FUNGI: Blackfellow's bread (sclerotium of the fungus *Polyporus mylittae*), weighing 4½ lb. and ploughed up at Kinglake—Mr. J. Ros Garnet.

ORCHIDS: *Spiranthes australis* Lindl; *Chiloglottis lyalli* Math.—Mr. Haas.

SHELLS: *Argonauta nodosa* Sol (Victoria) and 3 species of *Nautilus*—Mr. J. Gabriel; Mandarin's Finger-nails (*Lingula murphyii*) from Hayman Island—Mr. F. Lewis.

DRAWINGS: Bandicoots, orchids and fungi—Mr. E. Baxter; Horn Hut (Mt. Buffalo)—Mr. Haas.

FILMS OF NATIVE FLOWERS

Members will be seeing Dr. Ronald Melville's films of Kew Gardens (England) at the Club shortly, but there is a chance to see the excellent colour transparencies Dr. Melville has taken here of Australian flowers at an evening arranged by the Wildflower Preservation Society. It will be held on March 3, at 8 p.m., at Church of England Girls' Grammar School, Anderson Street, South Yarra. Admission 2/-.

WHAT, WHERE AND WHEN

General Excursions:

Saturday, February 28—Evening excursion to Astronomical Observatory. Leader: Mr. E. Lord. Meet at National Herbarium gates at 5.45 p.m. for picnic tea on Oak Lawn. Party limited to 25.

Saturday, March 7—Evening parlor-coach excursion to Healesville Sanctuary. Coach leaves Batman Avenue 2.30 p.m., returns 10.30 p.m. Bring a torch and one meal. Bookings, 15/-, with Mr. K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Group Fixtures, at Royal Society's Hall:

Monday, February 23—Botany Discussion Group.
Tuesday, March 3—Geology Discussion Group.

AIR LIFT FOR SWANS

The *Hawthorn Standard* recently made comment on a B.B.C. talk dealing with the now rare Trumpeter Swan of North America. This great bird has snow-white plumage and black bill and legs, and the largest are said to have a ten-foot wing span. The eerie clarion call, something like a French horn in tone, is produced through a remarkably looped and contorted windpipe.

In the early days, thousands of Trumpeters were slaughtered for their breast skins, used to make swandown quilts, and by 1940 only about 600 were left in North America. Some died of lead poisoning, by picking up too many of the shot pellets left after visits by duck shooters, and now drastic steps are being taken to prevent complete extinction.

The swans winter in the Western woods and nest as far north as open water can be found. At one such place, a remote seven-mile stretch of water called Lonesome Lake, game wardens fed the birds each winter with grain brought over a 70-mile sledge trail, but recent severe winter snows have prevented this haulage. Fortunately, the Royal Canadian Air Force came to the rescue, and for the past several years a small-scale air-lift has been in operation each winter. Sacks of barley are parachuted from about 500 feet, and the remnant of the rare birds is kept from starvation.

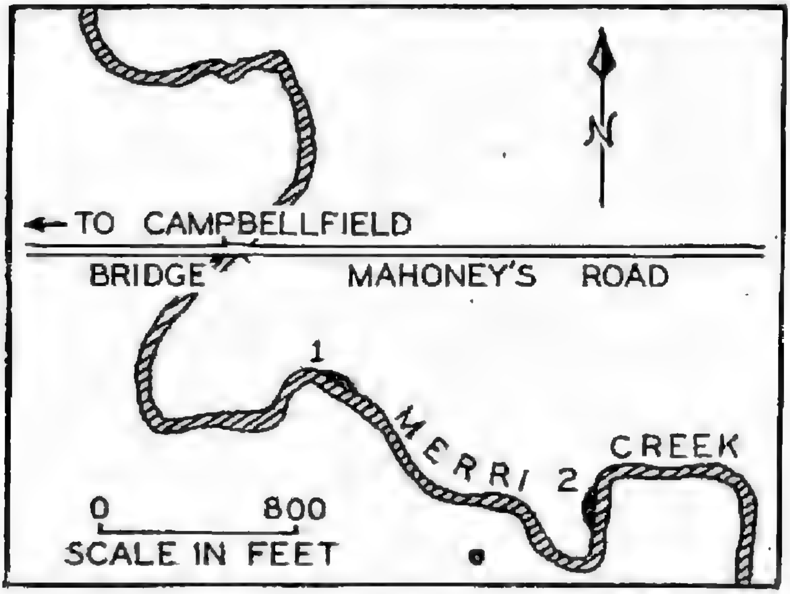
GIANT KANGAROOS LIVED AT CAMPBELLFIELD

By EDMUND D. GILL, Palaeontologist, National Museum, Melbourne.

The discovery of fossil bones in a terrace of the Merri Creek at Campbellfield on the northern outskirts of Melbourne shows that only a short time ago (from the geological point of view) giant kangaroos roamed that area. While carrying out his duties as a surveyor, Mr. A. J. Blackburn, of the F.N.C.V. Geology Group, found this locality and kindly drew the attention of the writer to it. Later the Geology Group held an excursion to this vicinity, and studied the story the rocks have to tell.

LAVAS ANCIENT AND MODERN

Outcropping in the creek floor and banks is an ancient flow of basalt which may belong to the Tertiary Older Basalts. Dr. A. B. Edwards kindly made a slide of this rock, and stated that while it appears to belong to that group, the evidence is not conclusive. Over this rock is a bed of ferruginous sandstone 3½ feet thick, which in turn is capped by a flow of Newer Basalt, probably of Pleistocene age. This succession of strata can be seen at the locality marked 1 in text-figure 1.



Text-Figure 1
Merri Creek near Campbellfield, north of Melbourne.
1. Section showing two basalt flows and intervening sandstone.
2. Site of fossil giant kangaroo bones.

The Victorian Naturalist

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PROCEEDINGS

The general meeting of the Club was held in the National Herbarium on January 12, 1953. About 120 members and friends attended, and the President, Dr. Margaret Chattaway, welcomed the visitors, many of whom were old members on holiday in Melbourne and who included Mr. and Mrs. Stan Colliver (Brisbane) and Mr. Leslie Woolcock of Canberra.

Two matters of general business came before the meeting. First, the President announced the appointment by Council of Mr. N. A. Wakefield as Editor of the *Victorian Naturalist* in place of Miss Watson who had resigned. Secondly, Dr. Chattaway brought up the subject of the replacement of trees in St. Kilda Road. She expressed the view that our F.N.C.V. should take a lead in the matter, and members endorsed her suggestion of writing to the newspapers requesting interested Societies (not individuals) to get in touch with the Secretary, so that a representative Committee could discuss the matter with Cr. Carlyle.

Details were given of a survey of the rare Helmeted Honeyeater by kindred bird clubs, and an appeal was made for more field workers. Further details will be given in the *Vict. Nat.*

Before commencing his lecture, Mr. Stan Colliver gave greetings from Mr. A. H. Chisholm in Sydney, and Mr. David Fleay of Queensland. He said also that Mr. S. E. Richardson, known to many members, and whose age was over 80, had just completed a journey of 1,000 miles upstream from the mouth of the Amazon River.

Mr. Colliver's talk, which was illustrated by slides, ranged over a wide variety of localities, as he spoke of geology and general natural history in South Queensland. The President conveyed the thanks of the members to Mr. Colliver, whose popularity and long service as Secretary are still vividly remembered.

NATURE NOTES

The destruction by grazing cattle at Mt. Buffalo was brought to attention again by the comments of Mr. Atkins on his recent visit.

Mr. Colliver reported on Curlews nesting at a homestead close to Brisbane over a long series of years.

Mr. Gabriel showed specimens of the true (Pearly) and so-called Nautilus shells. The latter is the Paper Nautilus—really an egg cradle. He asked for information from anyone finding the true, or Pearly Nautilus on Victorian beaches.

Mr. Stan Mitchell spoke briefly of a recent trip to Algiers where he had attended a Congress and exhibited aboriginal implements which had created great interest. He drew attention to some fine examples of Tasmanian native weapons which he had procured recently in England.

The base of the younger basalt is there 271.3 feet above M.M.B.W. datum (determined by Mr. Blackburn). In this section of its course, Merri Creek flows round the margin of the recent basalt flow. The basalt infills an old course, thus forcing the stream on to a higher level, just as the River Yarra now flows about sixty feet above a buried bed far below. Since the Newer Basalt flow consolidated, the Merri Creek has cut a shallow valley for itself, and on the sides of this valley are terraces of clayey silt not now reached even by the flood waters of the creek. In this terrace the fossils were discovered.

When the writer visited this area first in 1951, a new bridge was being built in Mahoney's Road over the Merri Creek, and the contractor provided the following information concerning bores put down in connection with the construction. The depths are from the deck level of the bridge which is 281.4 feet above datum.

WEST SIDE		EAST SIDE	
4ft.	Filling	9ft.	Filling
12ft.	Tough grey clay	1ft.	Yellow and black clay
1ft. 6in.	Loose stone	1ft.	Loose stone
3ft. 6in.	Tough yellow clay	1ft.	Rock
2ft. 6in.	Loose stone	2ft.	Yellow clay
1ft.	Yellow clay	10ft.	Rock
2ft.	Clay and loose stone	1ft. 6in.	Tough yellow clay
	Foundation on solid rock (basalt)	3ft.	Solid rock (basalt)
26ft. 6in.		19ft. 4in.	

FOSSIL GIANT KANGAROO AND BANDICOOT

The "tough grey clay" of the contractor is probably the same as the terrace of light-grey clayey silt with calcareous nodules to be seen at locality 2 (see text-figure 1). There a mineralized jaw of *Macropus titan* Owen was obtained along with a number of fragmentary bones. A ramus of a lower jaw of a bandicoot was also found, though not so mineralized. *Macropus titan* was probably the commonest of the giant kangaroos that inhabited Victoria in the Ice Age, for this species is found in so many places and sometimes in considerable numbers. It has been collected from a similar terrace further down the Merri Creek at Coburg.

A search in the National Museum collections shows that over 88 years ago, in July 1864, Mr. Frank Meyer found a number of mineralized bones in the same or a similar clayey silt on the banks of the "Merry Creek, 12 miles from Melbourne past Campbellfield". It could well be that Mr. Blackburn rediscovered the bed found by Mr. Meyer in 1864.

Members of the Geology Group also found a number of aboriginal scrapers, but what their relationship was to the terrace could not be determined.

A TENACIOUS TREE

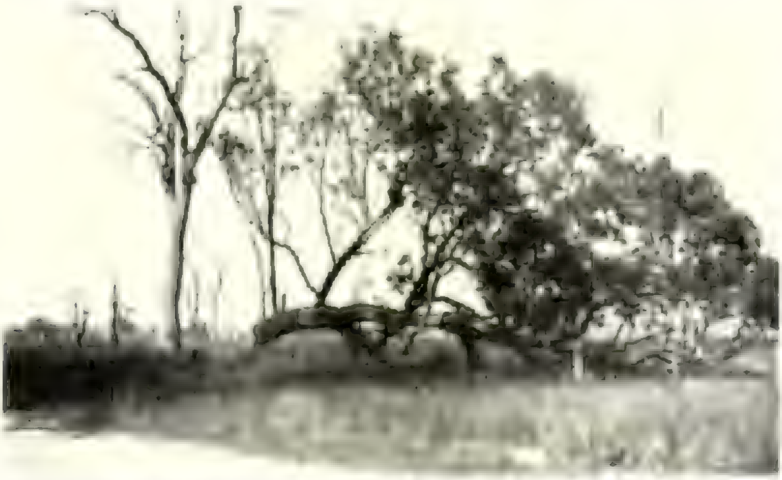
By R. N. Auchterlonie

Adventitious rooting in eucalypts is not common, but occasional examples prove that it does sometimes occur. One example was brought before the writer's notice in north-eastern Victoria.

The subject is a roadside Red Gum (*Eucalyptus camaldulensis*) which attained a height of approximately 50 feet, with bole diameter of about 2 feet and a spreading head of branches. The first crisis in this tree's life came about twelve years ago, when it was blown to the ground in a storm. The head of the tree came down in the adjacent paddock, the strong branches holding the trunk well clear of the ground, and forming an arch over the roadside fence. As often happens, the tree did not die, and the few roots retaining contact with mother earth were sufficient to sustain sap flow. Branches contacting the ground also developed roots.

The second crisis came some eight years later when someone sawed the tree through, removing about twelve feet of its trunk, thus completely severing all connection between the head of the tree and its original roots. This operation was no inconvenience, because time had seen the development of a strong and independent root system from the layered branches.

And so the old Red Gum lives on, in apparent good health, with a completely different set of roots from those on which it spent the greater part of its life. This trunkless and seemingly rootless tree presents an odd sight on the west side of the Targoora-Laceby South road, about eight miles south of Wangaratta.



Eucalyptus camaldulensis, sustained entirely by adventitious roots from the branches. Photo taken by the writer four years after trunk was severed.

THE VICTORIAN SPECIES OF POMADERRIS

By N. A. WAKEFIELD

Following the publication of new names for many species of *Pomaderris*, (in *Vic. Nat.* 68, pp. 140-143; Dec. 1951), the following notes are presented to assist naturalsits in dealing with Victorian species. The local members of the genus will be discussed on the basis of their enumeration in the 1928 F.N.C.V. *Census of the Plants of Victoria*, and Ewart's *Flora of Victoria* (1930).

A. *P. lanigera*, *P. ferruginea*, *P. vacciniifolia*, *P. apetala*, *P. prunifolia*, *P. elachophylla* and *P. phylicifolia* need not be amended; and *P. velutina* was fully dealt with in *Vic. Nat.* 58: 176 (March 1942).

B. *P. elliptica* is a species endemic in Tasmania; but its name has been a "dumping ground" for several species, the Victorian members of which may be distinguished by this key:

Petals auriculate, style hardly cleft:
  Calyx-tube and under-surfaces of leaves bearing simple hairs .. .. *P. sieberiana*
  Calyx-tube and under-surfaces of leaves devoid of simple hairs .. .. *P. multiflora*
Petals not auriculate, style deeply cleft:
  Leaves tapered at each end, quite glabrous above, the margins definitely recurved .. .. *P. discolor*
  Leaves usually blunt at each end, upper surface minutely stellate-pubescent along the mid-vein, the margins hardly recurved .. .. *P. pilifera*

C. The "Avon Pomaderris" was originally collected with mature fruit, and was erroneously identified with the New South Wales *P. ledifolia*, because of similarity of leaf. Another collection, in bud only, from Genoa River, was incorrectly designated as *P. phylicifolia* (var. *latifolia*). A third form, allied to the Avon plant, has been known as *P. ledifolia* var. *angustifolia*. (See Flora Australiensis 1: 419.) The Victorian specimens concerned are now identified as follows:

Flowers in leafy thyrsoid panicles, the ovaries prominent and glabrous; capsules glabrous and quite exserted:
  Upper-surfaces of leaves bearing stellate hairs .. *P. angustifolia*
  Upper-surfaces of leaves glabrous or bearing simple hairs .. .. *P. helianthemifolia*
(The true *P. ledifolia* is dealt with below, in section G.)

D. *P. betulina* has also provided a "dumping ground" for a number of species, the three Victorian ones being recognized by this key:

Flowers sessile or almost so, in clusters with persistent bracts:
  Leaves invested beneath with a stellate scurf .. .. *P. betulina*
  Leaves invested beneath with apparently simple woolly hairs:
    Upper leaf-surfaces bearing a velvety mat of minute hairs .. .. *P. subcapitata*
    Upper leaf-surfaces hispid with large stiff erect hairs, *P. eriocephala*

E. Reference to the type specimen of Hooker's *P. racemosa* has proved it to be the Tasmanian form of what has been known in Victoria as *P. subrepanda*; so the former name must replace the latter. The species which has been wrongly known, in Victoria, as *P. racemosa* is actually Mueller's *P. oraria*.

F. Specimens, from drier parts of north-eastern and eastern Victoria, with woolly vestiture, leaves stellate-pubescent on their upper surfaces, and large golden flowers in pyramidal panicles, represent a species now known as *P. aurea*.

G. As well as the 20 already mentioned, there are a further 9 species which have been added to the known flora of Victoria by their discovery in East Gippsland during the past fifteen years. Each of these, however, had been previously collected in New South Wales. They may be identified by these features:

Similar to *P. lanigera*, but with upper surfaces of leaves shining and almost glabrous, and with a coarser vestiture .. .. *P. affinis*
Upper branches thin and bearing long fine spreading hairs; under-surfaces of leaves bearing dense simple vestiture; flowers tiny, pale, apetalous, in large loose panicles, *P. ligustrina*
Leaves small, oblanceolate, upper surfaces hispid with simple hairs, under-surfaces invested with simple pubescence and some stellate hairs on ribs and petioles; flowers apetalous, in small loose panicles .. .. *P. pauciflora*
Leaves small, margins usually strongly recurved, upper surfaces velvety with minute dense hairs; petals none .. .. *P. pallida*
Leaves broad, blunt, strongly pennate-costate beneath; flowers pale, apetalous, in dense pyramidal panicles:
Upper leaf-surfaces glabrous, under-surfaces invested with short dense simple hairs .. .. *P. costata*
Upper leaf-surfaces pubescent with stellate (or rarely simple) hairs; under-surfaces stellate-tomentose .. .. *P. cotoneaster*
Leaves normally small, their upper surfaces glabrous, invested beneath with simple forward-appressed vestiture, the venation pennate or not apparent; flowers villose, in small loose clusters:
Petals absent; leaves rather blunt, with shining ferruginous vestiture beneath .. .. *P. sericea*
Petals present:
Leaves tiny, narrow, flat, with no lateral veins .. *P. ledifolia*
Leaves medium-sized with pennate venation, or else small broad and quite convex above .. .. *P. andromedifolia*

The list of species of *Pomaderris* on page 42 of the F.N.C.V. *Census of the Plants of Victoria*, should be amended as follows:

For *P. ferruginea*, read	S., E.
Add: *P. velutina* J. H. Willis	N.E., E.
Delete: *P. elliptica*	
Add: *P. sieberiana* N. A. Wakefield	S., E.
P. multiflora (DC) Fenzl	S., E.
P. discolor (Vent.) Desf.	E.
P. pilifera N. A. Wakefield	S., E.
Delete: *P. ledifolia*, and replace by *P. helianthemifolia* (Reiss.) N. A. Wakefield	N.E., E.
Add: *P. angustifolia* N. A. Wakefield	N.E., E.
P. eriocephala N. A. Wakefield	N.E., E.
P. subcapitata N. A. Wakefield	N.E., E.
Delete: *P. racemosa*, and replace by *P. oraria* F. Muell. ex Reiss.	All but N.E.

Delete:	*P. subrepanda*, and replace by *P. racemosa* Hook.	N.W., S.W., S. (f.)
Add:	*P. aurea* N. A. Wakefield	N.E., E.
	P. affinis N. A. Wakefield	E.
	P. ligustrina Sieb. ex DC.	E.
	P. pauciflora N. A. Wakefield	E.
	P. pallida N. A. Wakefield	E. Ingeegoodbee
	P. costata N. A. Wakefield	E.
	P. cotoneaster N. A. Wakefield	E. Upper Genoa River
	P. sericea N. A. Wakefield	E. Upper Genoa River
	P. ledifolia A. Cunn.	E. Mt. Kaye
	P. andromedifolia A. Cunn.	E.

In a later issue of the *Victorian Naturalist*, due credit will be given to those whose collections constituted these, and other, new records for Victoria.

THOSE LONDON STARLINGS

By DR. MARGARET CHATTAWAY

Melbourne City councillors may have their difficulties with the pigeon pests, but as yet starlings have not caused the acute problems that they do in London. A paragraph in a recent issue of *Country Life* (August 17, 1951) tells of the failure of the Westminster City Council to devise a practical defence against the starlings that roost in thousands on the buildings in Trafalgar Square. These birds are commutors in reverse; they leave the city at dawn for feeding grounds in the surrounding country, returning at dusk to their roosts. It is a memorable sight to see the sky darkened by a flight of returning starlings as they fly in over the outer suburbs.

Most of the remedies suggested, such as electric shocks from low tension wires, or sprays, are either too epensive or merely serve to drive the flock from one building to another. The Constitutional tried letting off fireworks, but these, so far from frightening the birds from its buildings, attracted those from neighbouring ones, as a good fireworks display on Guy Fawkes night will bring round a crowd of children from adjacent streets.

In summer the starlings—like other Londoners—pine for a change of scene, and they roost during July, to a number of about 100,000, on Duck Island in St. James Park. The City Council decided to eliminate this gathering, but how? When pressure hoses were tried the birds merely moved to the Victoria Memorial outside Buckingham Palace, where they were even less welcome.

In Melbourne the starling menace has not yet reached these proportions, but we had better watch out. Those who use the Hanna Street tram route for their daily journey to the city may have noticed, especially in winter when dusk coincides with the after-work exodus, that here, too, a peak hour rush may be seen, but in the reverse direction. Flocks of mynahs and starlings are also making their way homewards to a large corrugated iron shed half-way along the street. Here they may be seen, perching on the trees and alighting on the roof, chattering and gossipping before they make their way under the louvres of the roof to shelter for the night.

REQUEST FOR SEEDS OF NATIVE PLANTS

Our country member, Mr. E. T. Muir, of 45 Normanby Street, Dimboola, would like to hear from anyone who is willing to send him seeds of native plants, particularly members of the Lily family. These are needed for an American naturalist, and seeds of American plants may be available in exchange.

LINKAGE OF UNCOMMON PLANT GENERA AT CRESWICK

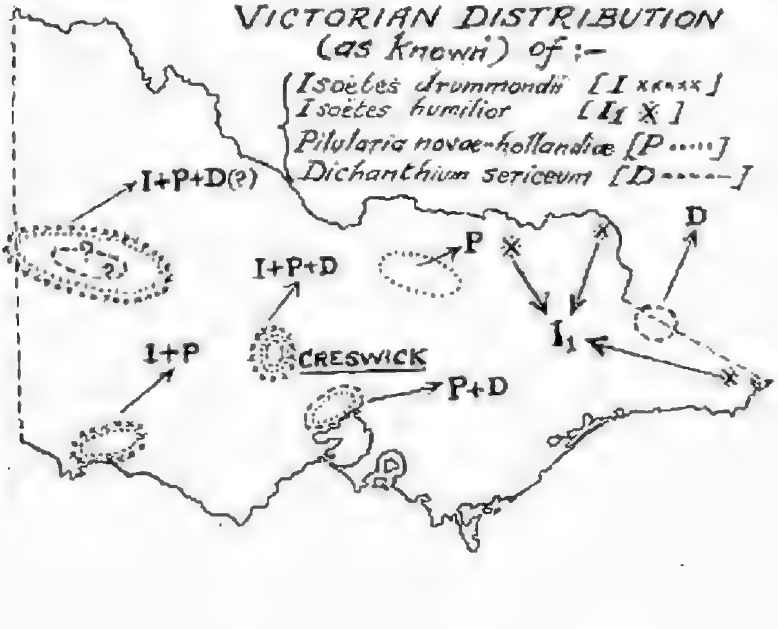
(*Isoëtes, Pilularia* and *Dichanthium*)

By J. H. WILLIS, National Herbarium, Vic.

Creswick has a rich diversified flora, and within a radius of about ten miles there are at least 414 indigenous vascular plants, more than 60 bryophytes and 150-200 species of the higher fungi. Several important papers in the *Victorian Naturalist* concern this flora [see T. S. Hart. "Notes on the Distribution of the Eucalypts about Creswick and Clunes"—Vol. 34, Oct. and Nov. 1917; also R. W. Bond, "Ferns in the Creswick District"—Vol. 50, Jan. 1934, and Vol. 59, Dec. 1942].

During January, Mr. R. V. Smith and I re-trod parts of the country which had so fascinated us as students at the School of Forestry there, and we were rewarded by some excellent discoveries including ten plants not hitherto recorded for the district. Basalt plains north-west of the township provided a crescendo of botanical excitements (in spite of heat, flies and troublesome grass-seeds). We found rare *Scirpus congruus* (Nees) S. T. Blake, of which the sole Victorian representation was a scrap collected by F. M. Reader in "Lowan Shire", Nov. 1892. Nearby, on drying mud grew *Isoëtes drummondii* A. Br. (Quillwort) and *Pilularia novae-hollandiae* A. Br. (Pillwort), while the rocky gorge of Creswick Creek at Tourello yielded *Dichanthium sericeum* (R. Br.) Camus (Blue Grass)—all three genera new to central Victoria.

The accompanying sketch will show roughly where these species have been collected in the State: *Dichanthium* alone occurs at Suggan Buggan and along the Deddick River (upper Snowy region); *Pilularia* is present from around Lake Winton to Graytown (Goulburn Valley); *Dichanthium* and *Pilularia* both occur on the Keilor basaltic plains (between Broadmeadows and Little River; *Isoëtes* is co-extensive with *Pilularia* between Hawkesdale and Tyrendarra in the south-west, and also in the western Wimmera (between Minyip and Serviceton—on sandy as well as heavier "crab-hole" country).


VICTORIAN DISTRIBUTION
(as known) of :-
Isoëtes drummondii [I xxxxx]
Isoëtes humilior [I₁ ✕]
Pilularia novae-hollandiae [P .....]
Dichanthium sericeum [D -----]
I+P+D(?)
--?--
?
I+P+D
P
D
I₁
I+P
CRESWICK
P+D

There is one "Wimmera" specimen of *Dichanthium* in Melbourne Herbarium, but the location is too vague for indicating any field proximity to the two pteridophytes. Creswick becomes an important new link between east and west in the range of these three genera, and is the only definite locality in which they are at present known to overlap. The other Victorian quillwort, *Isoëtes humilior* F. Muell. (if really distinct) occupies pools on granitic rocks in the eastern portion of the State—Mt. Pilot near Chiltern, Upper Murray, Little River falls at Wulgulmorang and Genoa gorge. [See *Vict. Nat.* 62: 125 (Nov. 1945)].

AN ALBINO ORCHID (CALOCHILUS ROBERTSONII)

By W. L. WILLIAMS

In the *Victorian Naturalist* of November 1944, I gave an account of albinism in specimens I had collected of a number of native flowers in various genera. On November 16, 1952, I added to my list an albino form of *Calochilus robertsonii*, collected at the eastern end of the Macedon Range. About a dozen normal specimens were in flower, their gorgeous purple beards doing a little to brighten a rugged hillside clothed with Silver-leaf Stringybark and Small Grass-tree.

The spike of the albino carried four flowers, one dead and fruiting, a second fully open but badly chewed and torn, and two still in bud. One of the buds has opened, the specimen being in water, and it well confirms the impression created by the damaged bloom. The beard is a glistening white, though the hairs near the tip are greenish at their bases. The glands on the column wings are also silvery white, except that they carry a faint spot of mauve at the tip. The other segments of the flower are of a clear and rather pale green.

Shade had nothing to do with the phenomenon; the orchid was growing in full sunlight.

NATIVE POPPY

The comment in the *Vict. Nat.* of February 1952 (68: 163) on the rarity of the native poppy, brought a letter from our country member, Mr. W. Hunter, listing several occurrences of the species in East Gippsland; and National Herbarium records show it to occur also in a few places in the Mallee and Wimmera, as well as at Portland and Daylesford, apparently usually in dry conditions.—N.A.W.

MITCHELL GORGE MOSSES

While on the excursion reported by Mr. Ken Atkins in the January issue of the *Victorian Naturalist*, Mr. E. Dakin collected 21 species of mosses. Undoubtedly the most interesting was an example of *Papillaria crocea* in fruit—a rare occurrence for any member of this genus in Victoria. *Papillaria* species are string-like mosses which frequently hang as festoons on the branches of jungle trees, but *P. crocea* was discovered in the Ferntree Gully National Park (Dandenong Ranges) during December by H. T. Clifford—the most westerly record known. Another attractive and rather uncommon tree moss collected by Mr Dakin was *Neckera aurescens* (flattened fern-like branches and shining leaves that are each regularly and concentrically undulate); again, Mr. Clifford found the same species in the Dandenongs (Clematis Gully) for the first time last July. The Mitchell Gorge suite included good fruiting material of *Cryphaea dilatata*, *Macromitrium archeri* and *Ptychomitrium mittenii*—all unfamiliar mosses in western Victoria.

—J.H.W.

SCOTTISH PAPERS WORTH READING

Volume 3 number 32 of The Advancement of Science, of which a copy is now available in the F.N.C.V. library, contains two articles on natural history which may be of interest to our members. The first, by Professor J. R. Matthews* is a paper which was read before the sections of Zoology and Botany at the Edinburgh meeting of the British Association for the Advancement of Science. It deals with botanical aspects of nature conservation in Scotland, and contains many suggestions and reminders for all countries such as ours, in which the destruction of our natural flora has moved even more rapidly than in Scotland, but in which, as in Scotland, remoteness of the more mountainous parts has made it possible for some to be saved, even at this late hour.

The author deals with two aspects of the subject. Some species are rare, few in number and growing in restricted localites, others are relatively common and at present are growing in abundance, but may yet be in as much danger of extermination as the rare ones, because the economic needs of the country are causing changes which will, of necessity, destroy their habitat. Among these latter are all bog and swamp plants, which will disappear as more land is drained for pasture and agriculture, and the flora of native deciduous woodland, of which, through centuries of exploitation so little remains. Professor Matthews states that it is estimated that before man appeared in Scotland 50 per cent. of the land surface was under forest; at present the figure is about 5 per cent.

The widening of roads and replacement of hedges by fences has caused a marked decrease in the wild rose flora; the felling of native pine forests has caused the disappearance of more than seven species peculiar to that habitat. The extensive cutting of peat, and its present commercial exploitation to replace coal as a household fuel is, at present, an economic necessity, but it could have disastrous results on the adjacent countryside, for peat, which is only formed under conditions of very high rainfall, is one of the soils that is most retentive of moisture, and its loss from a mountainous district might well be followed by flooding and soil erosion.

There is much matter in this article for thought; exploitation of natural reserves has the same results in every country, and at the present time many countries are trying to repair the damage done by unrestricted exploitation of past generations.

In Scotland there has recently been set up the Nature Conservancy of which Professor Matthews says, "Its functions are summed up in its charter: 'To provide scientific advice on the conservation and control of the natural flora and fauna of Great Britain; to establish, maintain and manage natural reserves in Great Britain, including the maintenance of physical features of scientific interest; and to organise and develop the research and scientific services related thereto'."

All lovers of nature will approve this course and hope that from such small beginnings may grow larger schemes that will be world-wide in their application.

The other paper was read by Dr. F. Frazer Darling to the section of Zoology and the sub-section of Forestry at the same meeting.† It deals with the relation of mammals to forest growth.

Dr. Darling groups forest animals in five groups, the predatores and insectivores, which favour forest growth, and the grazers, browsers and rodents, which depress it. Of the wild predatory animals that roamed British forests in Saxon times only about four exist in any number to-day, and they are insufficient to deal with the menace of the rodents. Among the grazing animals, the ones that do most damage to-day are deer, which are kept under control only by wolves, foxes and humans. Wolves are extinct in Scotland, foxes cannot deal with adult deer, and humans are at present not keeping them in check sufficiently to preserve young forest growth from damage.

In this article the facts do not apply directly to Australia nor can the conclusions drawn from them be so applied, but the paper is of great interest none the less, and thought-provoking to anyone genuinely interested in the problems of maintaining and improving woodlands, whether of natural forest or of planted exotic species. —M.M.C.

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*Botanical Aspects of Nature Conservation in Scotland. The Advancement of Science 8: 32: 363-373: J. R. Matthews. 1952.

†Mammals and Forestry. The Advancement of Science 8: 32: 414-417: F. Fraser Darling. 1952.

LONDON VISITORS

All over London there are vigilant bird-watchers, scanning the streets, parks and buildings for any birds that may have strayed in from the country. In a B.B.C. talk called "I Spy Strangers," R. S. R. Fitter, a well-known British ornithologist, mentioned some of the avian visitors that have come to the capital recently. The black red-start, once so rare, is now almost a commonplace in the City of London, where it nests annually in various localities. But it is the passing visitors that bring the most excitement to London's watchers. The peregrine falcon that chased a kestrel over the Central Hall at Westminster was seen by a distinguished civil servant who is a great bird lover, while the peregrine that occasionally visits St. Paul's Cathedral to dine at leisure is as warmly welcomed by the watchers as it is disliked by the pigeons that form its meals. Another watcher, at present head of one of the London colleges, happened to see a migration of long-tailed tits proceeding through the City. He heard them calling in the trees near St. Paul's, and, in spite of the traffic noise, was able to pick out their curious little splutter. He followed them by foot and by bus, and came up with them again by a church in Holborn. In the same afternoon, other people heard them in Lincoln's Inn and in Bloomsbury.

This and much other information about birds in London is contained in two remarkable reports which appear each year. One is a report on bird sanctuaries in the royal parks and is issued by the Ministry of Works; the other, the London Bird Report, is the work of the London Natural History Society. To the outsider it may seem strange that there should be two yearly reports devoted to bird life in the vast and sprawling City of Greater London, but there is plenty of it to be seen by those who go about with their eyes open. To a migrating bird London, with its thirty miles or more of bricks and mortar, takes as much crossing as the Straits of Dover, and it is not surprising that some tired flyers come down in the middle. In 1949 a most uncommon bird was seen there; this was a Great Grey Shrike, which chose to take a rest in a taxidermist's yard in Camden Town. "I'm glad to be able to tell you," said Fitter, "that despite the foolhardiness of this bird, it created a record by being the first Great Grey Shrike ever known to have left a bird-stuffer's premises alive."

(From *The Hawthorn Standard*, Wed., July 18, 1951.)

PROTECTION OF NATURE

One good law instigated by the Nazis and approved by all four occupational powers in 1945, was the "protection of nature". The law is still in force in Western Germany, but is ignored in Eastern Germany. It is forbidden to catch animals by trap or snare, or anything that will hurt the animal; they may be shot dead, or brought back alive and unharmed. It also is forbidden to catch singing birds. The man keeping the law in order is 60-year-old Herr Herold, a slender, white-haired, dusty old gentleman who becomes a ball of fire if he hears the Allies have been shooting his ducks out of season.—Reprint from *Progress Press*, 22/6/50.

NEST BOXES FOR BIRDS — A REVIEW

"The Encouragement of Birds in Commercial Plantations by Nest Boxes and Other Means," by J. M. D. Mackenzie.

A paper on this subject was presented to the Edinburgh (1951) meeting of the British Association for the Advancement of Science and has now been printed in the Journal of the Royal Scottish Forestry Society [*Scottish Forestry* 6: 10-17 (1952)*]. Interesting records are given of attempts to encourage British birds to nest again in areas from which they have been driven, through loss of their normal nesting places as monospecific, even-aged stands have replaced the natural forests of mixed species.

"Bird management" has now been studied for many years by foresters, as well as by ornithologists, and since the end of the last century the beneficial versus the harmful habits of certain species has been a controversial subject. In the main the present view is that birds can be effective controllers of insect pests, and there is no proof that they act as a hindrance.

In 1942 the British Forestry Commission initiated a nest box experiment in the Forest of Dean, and later other areas were added; in 1948 the experiments were put into the hands of the Edward Grey Institute. In this paper the author gives interesting details of the making and placing of boxes. He finds that plastic boxes are favoured, with metal as a second and wooden boxes as a rather poor third choice. He finds also that both he (for convenience) and the birds liked boxes set at 5-6 ft. from the ground, but that boys and hikers do too, and that 10-15 ft. is usually a safer height, although it means extra time and trouble. Interference with the boxes is serious in some places for "the persevering boy will cheerfully smash a box or take it home. They do not seem to realize that there is anything wrong with this, for some obscure reason connected with its being in a wood." Is it cheering or depressing to find that human nature is just the same at home as in Australia?

His boxes, with 1⅛-inch entrances, were used for nesting by ten or a dozen different species—tits, flycatchers, nuthatches, robins, wrens and tree-creepers—and in winter they were used as roosts. Further improvement of the bird population may be made by planting a few "preferred" trees for ordinary open nests and by the occasional pruning of selected trees to leave cups and forks. It is the removal of old and crooked trees by thinning plantations that leaves them so bare of nesting sites.

One of his conclusions is that, whereas before boxes are put up the number of nest sites undoubtedly limit the density of the bird population, with increasing use of nesting boxes food supplies and territory become the limiting factors.

I fancy naturalists have noticed the changes in bird population that have occurred in Australia as a result of settlement, the clearing of virgin forest and the tendency to substitute exotics for native trees. It is encouraging to find similar changes in bird population have been recognized in other countries, and that attempts have been made to regain a balanced population. Is it too much to hope that ornithologists and foresters in Australia may some time carry out similar investigations and help to restore the appropriate nesting sites to some of our own displaced birds.?

M.M.C.

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*It is hoped that a reprint of this interesting paper will shortly be available for members of the F.N.C.V.

EDITORIAL CHANGE

Miss Ina M. Watson for private reasons relinquished the onerous position of Honorary Editor in November. The Club is grateful for her services during the previous 20 months, and begs the literary support of members for her successor, Mr. N. A. Wakefield.

The Victorian Naturalist

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PROCEEDINGS

An Extraordinary General Meeting of the Club was held at the Herbarium on February 8, 1953, at 7.45 p.m., to discuss an application by the Frankston F.N.C. for affiliation with the F.N.C.V. The Secretary read statements of the objects of the F.F.N.C., which accorded with those of the F.N.C.V. It was proposed by Mr. Lewis, and seconded by Mr. Chalk, that the application of that Club be endorsed by the F.N.C.V. This was carried, and the President adjourned the Extraordinary Meeting.

The Monthly Meeting of the Club followed, with Dr. Chattaway in the chair, and about 190 members and visitors in attendance.

The President announced the decease of an Honorary Member, Mr. W. F. Gates, aged 96; and the meeting stood in silence for one minute as a mark of respect.

Dr. Chattaway introduced Dr. R. Melville, of the Royal Botanic Gardens, Kew, England. Dr. Melville gave an interesting talk on the history of those Gardens, from their commencement in 1760; and described them as they are to-day, illustrating the lecture with many beautiful colour slides. Members asked numerous questions which were ably answered by the speaker. Dr. Chattaway thanked Dr. Melville on behalf of the Club.

Quite a number of new members were elected to the Club. Mr. and Mrs. M. R. O. Millett and Charles Millett became Joint Members and Junior Member respectively; Mrs. Pat Faggetter, Miss Ruth McVicar, Miss Laura Younger, Miss Betty Sommerville and Mr. F. R. Coulson comprised the new Ordinary Members; and Mrs. Hilda Ramsay, Mr. K. C. Rogers, Mr. Leo Hodge and Mr. I. R. McCann were the new Country Members.

It was announced that Council had approved the granting of Life Membership of the Club to Rev. H. M. R. Rupp, of Willoughby, N.S.W.

The Club was informed that the Natural History Medallion for 1952 had been awarded to Professor Cleland, of Adelaide.

Mr. Dickins reported being present at the departure of the "Tottan" for the Antarctic. On behalf of the Club he had farewelled Mr. Bechervaise, who is in charge of the relief party for Heard Island.

Miss Wigan, on behalf of the Club, thanked Miss Ina Watson for her two years of editorship of the *Victorian Naturalist*, and particularly for the excellent Lyrebird issue of September 1952.

Dr. Chattaway closed the meeting at 9.45 p.m. for the Conversazione and the examination of specimens.

NATURE NOTES

Mr. Tarlton Rayment remarked upon a large bee, one of the group of leaf-cutters, which had departed from its natural habits to engage in the purloining of material from domestic bee hives for the purpose of furnishing its own home.

Miss Neighbour illustrated a safe method by which housewives may remove Huntsman Spiders from walls, by using a potlid and piece of cardboard. Miss Watson suggested using a long tumbler instead, thus facilitating immediate retreat if necessary.

EXHIBITS AT FEBRUARY MEETING

BOTANY: Garden grown native flowers—Mrs. Lewis, Mrs. Bennett, Mr. A. E. Brooks, Mr. J. Seaton. Native plants from Mount Buffalo—Mr. H. Stewart. Butterfly Orchid, *Sarcochilus parviflorus*, which had 35 flowers last season, collected in South Gippsland and presented to the Botanic Gardens—Mrs. O. Brewster. Starfish Fungus, *Ascroe rubra*, from Lake Mountain, dried under high vacuum while frozen, to preserve size, shape and some coloration, collected 24/1/53 at about 5,000 feet—Mr. J. R. Garnet.

MARINE BIOLOGY: Upper jaw of Great Sawfish, a species of shark of tropical eastern Australia and elsewhere, growing to 20 feet in length and with a saw 5 feet long—Mr. F. Lewis. Coral-dwelling Mollusc, *Magilus antiquus*, from Mauritius—Mr. Gabriel.

CONCHOLOGY: Five species of Land-Shells (Snails) introduced into Victoria—Mr. Gabriel.

GEOLOGY: Series of specimens of rocks of metamorphic origin, from 251 mile-post on the Princes Highway, east of Orbost—Mr. A. A. Baker. Rock specimens from the west shoreline of Waratah Bay, South Gippsland—Mr. A. Burston.

MISCELLANEOUS: Photographs of Lake Hattah Sanctuary, illustrating two fruiting *Codonocarpus*—C.S.I.R.O. Snapshots of Kew Royal Botanic Gardens—Miss E. Raff.

WHAT, WHERE AND WHEN

Excursions:

Saturday, March 14—Excursion to Werribee Gorge. Subjects: Geology and Botany. Leader: Mr. W. Burston. Take 8.40 a.m. Ballarat train, alight Bacchus Marsh, return to city 8.10 p.m. Bring two meals.

Sunday, March 15—Excursion to King's Falls, Arthur's Seat. Take 8.45 a.m. Frankston train (express), then bus to Dromana. Leader: Botany Group. Bring two meals.

Monday, April 6—Excursion to Seaholme (weather permitting). Subjects: Sea-marsh Flora and Birds. Leader: Mr. K. W. Atkins. Take 9.3 a.m. Altona train, alight Seaholme. Bring one meal.

Saturday, April 11—Planting and inspection day at Maranoa Garden, Balwyn. Plants will be provided. Take Mont Albert tram, No. 42, in Collins Street, alight stop No. 54, Parring Road, walk up Parring Road to gates of Park, where leader, Mr. A. J. Swaby, will meet party at 3 p.m. Bring friends and make the garden more widely known.

Group Fixtures, at Royal Society's Hall:

Monday, March 23—Botany Discussion Group.
Tuesday, April 7—Geology Discussion Group.

KENNETH ATKINS, Excursions Secretary.

ECOLOGY OF THE BOGONG HIGH PLAINS

(LECTURE GIVEN AT CLUB, DECEMBER 1952)

By DR. REUBEN T. PATTON

The Bogong High Plains are situated in the north-east of Victoria, at an elevation of approximately 5,500 feet, and form part of the Australian Alps; but as the popular name implies, their surface is reasonably level, not mountainous. They are actually a plateau caused by an uplift which took place in either late Pliocene or early Pleistocene times. (Singleton, 1939.)

The uplift was possibly as much as 4,000 feet and reasonably rapid, hence there is a striking contrast between the mature topography of the High Plains and the steeply eroded country surrounding them. In Fig. 1 can be seen the junction or *knick point* of the two cycles of erosion. The Plains consist of wide open country gently sloping towards the valleys in which streams meander through sphagnum beds. From the surface of the Plains rise a number of hills, most of which are capped with boulders.

CLIMATE

The elevation took place at a time when temperatures were still falling from the warm conditions of the Brown Coal period (Miocene), and to this fall was added a further decrease due to the uplift. Altogether, from both causes, the High Plains suffered a total loss of approximately 23°F., and thus a totally new environment was created in Australia. Snow lay for most of the year, and possibly all the year in sheltered areas. So heavy was the rainfall that it is doubtful if any vegetation covered the surrounding rapidly eroding country. Since the coldest period, rainfall has decreased and temperatures have increased, so that to-day vegetation has gained the upper hand and erosion is held in check.

The temperatures now, based on those of Hotham Heights and allowing 2° extra for the lower height of the Plains, show that, from May to September, average monthly temperatures are less than 40°F. Below this temperature both plant growth and the melting of snow are retarded, and above it both are accelerated. April and October have temperatures only slightly above 40°F. and are therefore of little assistance to plant growth. There is good flowering in December, but January has the maximum; and it is of interest to note that in September the temperature of Melbourne corresponds to that of the High Plains in January. Temperatures of the High Plains are now from about 7° to 10° F. warmer than they were at the coldest period.

PLANT POPULATION

As the uplift of several thousand feet was rather rapid, not all the plants of the original lower surface could adjust themselves to the rigors of the alpine environment; and hence only those with a wide amplitude of adaptability could survive there. The present-day flora is rich in species, and these may be considered as derived from four sources.

First are the plants that survived the uplift, and these form a considerable portion of the whole. Among them are *Acaena sanguisorba*, *Craspedia uniflora*, *Danthonia semiannularis*, *Drosera peltata*, *Geranium pilosum*, *Leptorrhynchus squamatus*, *Polystichum aculeatum*, *Stylidium graminifolium* and *Ranunculus lappaceus*, all of which are well known in lowland areas. Probably the Snow Gum, *Eucalyptus pauciflora*, belongs to this group, for it has a fairly wide lowland range. Apart from the extreme range of the adaptability of the species, this group is not important.

Of much greater interest are those species endemic in the alpine areas and derived from typical Australian genera, for they may be used as a measure of the rate and mode of evolution. In this second group are *Baeckea gunniana*, *Bossiaea foliosa*, *Callistemon sieberi*, *Leucopogon hookeri*, *Prostanthera cuneata*, *Phebalium phylicifolium* and *Velleia montana*.

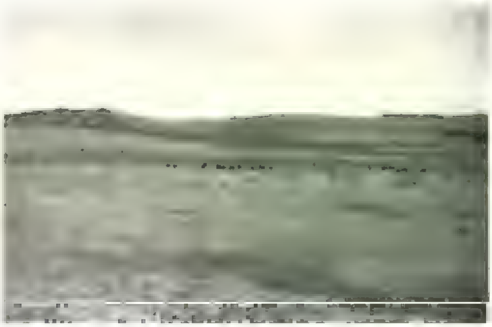
The third group of species is derived from genera which have a wide distribution beyond Australia, but which also have representatives elsewhere in this continent. These species, like those of the second group, are of great interest, for they, too, may be used to measure the rate of evolution. Among them are *Euphrasia antarctica*, *Geranium sessiliflorum*, *Ranunculus gunnianus*, *R. millanii*, *R. muelleri*, *Podocarpus alpinus* and *Veronica nivea*.

Fourthly there is a group whose genera are confined to alpine regions and whose geographical affinities are with plants of other southern lands, particularly New Zealand. With few exceptions these genera are represented here by only one species which in some cases is found also in New Zealand. In this group, however, it is of little significance that some *species* occur also in New Zealand, as it is the *genera* that are of importance. Amongst the plants concerned are *Aciphylla glacialis*, *A. simplicifolia*, *Astelia alpina*, *Caltha introloba*, *Oreobolus pumilio*, *Oreomyrrhis andicola*, *O. pulvinifica* and *Trisetum subspicatum*. These genera could not have been in Australia prior to the uplift, for there was not an alpine climate, and therefore these must have arrived after the formation of the Alps, but it is not at all clear by what means. In his study of Tasmanian mountain floras, Gibbs (1920) considered that the genera, and in some cases the species, of this flora were derived from the high mountains of New Guinea by means of high north-west winds which carried the seed on to New Zealand and South America. But if this were the case one would expect a good representation of Australian genera, particularly in New Zealand. It is possible that in the Pleistocene period a series of islands may have facilitated the transport of the fourth

PLATE VII

1. *Knack Point*: Junction between the mature topography of the Plains and the deep valley of Middle Creek.

2. *Three types of habitat on the High Plains*: Swamp in foreground, grass plain in left background, and rocky hilltop on right.

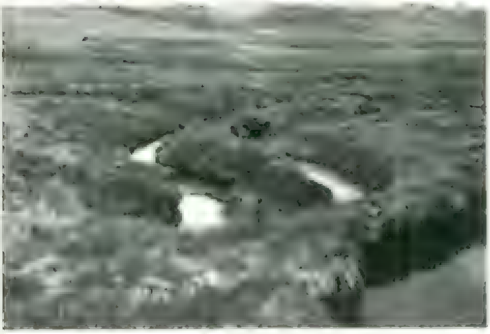


3. *Grassland association*: Grass plains.

Plate VIII

4. *Grassland association*: Tussock Grass, *Poa caespitosa*, which constitutes the grassland.

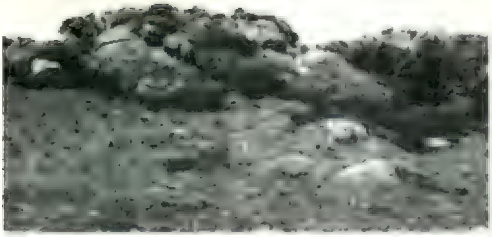
5. *Sphagnum association*: Mounded surface of the Sphagnum beds.



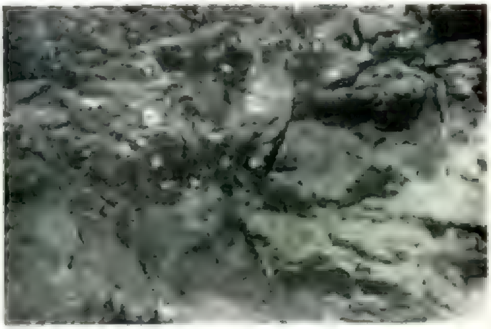
6. *Sphagnum association*: An extreme meander, held in position by the Sphagnum beds.

PLATE IX

7. *Sclerophyll association* at rear: *Prostanthera cuneata* and *Orites lancifolia.* Sphagnum in foreground



8. *Sclerophyll association.* *Orites lancifolia* espalier on rocks.

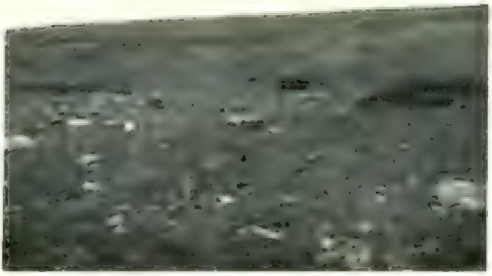


9. *Brachycome nivalis* in sclerophyll scrub.

PLATE X

10. Habitat at [illegible]. Note spring arising at foot of bank.

11. Typical [illegible] or estuary-like head of stream. The camp is below the [illegible] of the photo.



12. *Dried-up spring*

group when the alpine climate was very much lower than it is to-day; but it did not permit the reverse movement of the characteristic Australian genera such as *Acacia*, *Banksia*, *Casuarina* and *Eucalyptus* which evidently arrived after the original connection was severed.

Hooker (1853) pointed out the fairly intimate botanical connection between Australia and New Zealand, and this suggests a land connection between the two. However, the botanical relationships belong to two widely separated periods of time—the modern alpine, and the older one that goes back to the Brown Coal period. Represented in both countries are the genera *Coprosma, Drimys, Hedycarya, Rapanea, Nothofagus, Olearia, Pittosporum* and *Pomaderris*. All these belong to the ancient period; and it is of interest to note that all are found in the fern gullies.

VEGETATION

Although the climate may be regarded as uniform on the High Plains owing to the low relief, yet the rather small variations in the topography produce striking differences in the vegetation. Standing on any elevated area, one may readily recognize three fairly extensive plant associations by their various shades of green.

The most widespread is the Grassland of the more level areas—silvery-grey green in summer but fading to a greyish straw in autumn. In the lower land, the Sphagnum Bogs, known as Moss Beds, are marked out by their bronze-green due to the large amount of dead tissue associated with *Richea gunnii*, *Restio australis*, and *Hypolaena lateriflora*. On the higher ground, generally where boulders occur, the Sclerophyll Scrub is easily picked out by its dark olive-green colour. Sometimes this last is dominated by snow gums, but as the trees are not always present, it is preferable to refer to this association as *scrub* instead of *forest*.

These three associations were first recognized on the Kosciusko Plateau by McLuckie and Petrie and described by them. Besides these three there are two smaller associations.

The ALPINE GRASSLANDS, both in its species composition and growth forms, has a close relationship to the lowland grasslands; but in percentage composition it is very different. In the High Plains the Tussock Grass, *Poa caespitosa* var., dominates all else; while *Danthonia semiannularis*, very common on the Basalt Plains, occupies a very minor place, and *D. nudiflora*, an endemic, is very abundant. Other grasses present are *Agropyrum scabrum*, *A. velutinum*, *Agrostis venusta*, *Hierochloe redolens*, *Stipa pubescens* and *Trisetum subspicatum*.

Rosettes, fairly common in the lowlands, are also plentifully present: The family *Compositae* is strongly represented by *Brachycome decipiens*, *Celmisia longifolia* — perhaps the most striking plant in the alpine associations, *Craspedia uniflora*, *Micro-*

seris scapigera and *Podolepis acuminata*. Other rosettes are *Aciphylla glacialis, Cardamine hirsuta, Gentiana diemensis, Oreomyrrhis andicola, Plantago tasmanica, Ranunculus lappaceus* and *Viola betonicifolia*. Other growth forms are not prominent, but small cushions are formed by *Colobanthus apetalus* and *Scleranthus biflorus;* and *Gnaphalium collinum* grows in small mats. Very large mats are produced by *Kunzea muelleri* and *Pentachondra pumila*, the former very striking in flower and the latter in fruit. Both these are woody plants and belong to genera strongly represented by shrubs.

The MOSS BEDS are composed of living and dead material of *Sphagnum cymbifolium* and vary in thickness from under a foot to at least seven feet. When well developed the beds consist of three layers: the upper white and living, the second white and dead, and the lowest—the greatest in thickness—dark and dead and passing into peat. The surface of these sphagnum bogs is not level but is formed of a series of small mounds, which character is to be seen in the High Moors of Europe. The general mass of sphagnum is not solid, and when walking across it, its springy character is very noticeable. These Moss Beds are extremely interesting for the sphagnum is not only a constituent member of this association, but it also forms the substratum in which the other species grow. And if we accept the definition that soil is the medium from which roots draw their nutrients, then the sphagnum is soil!

The development of these sphagnum Moss Beds is dense enough to keep the streams in their own channels and also to build vegetable dams. Both these characters have already been observed by Dulhunty (1946) in the Kosciusko region. Another feature observable at the High Plains is that the streams are often held on a course higher than the lowest portion of the area. Some of them meander excessively in the sphagnum bogs and convey the impression of a very maturely eroded surface.

The moisture content of these beds is very high, for water is held both physiologically and physically. The average moisture content of several samples tested in the laboratory amounted to 1200%, calculated on the dry weight of organic matter; but in the bog itself the content is higher.

The plant population is a very varied one. In addition to *Sphagnum* are the characteristic *Astelia alpina* forming dense colonies, *Restio australis. Hypolaena lateriflora, Richea gunnii, Epacris bawbawiensis. E. microphylla* and *E. petrophila*. The presence of the woody species growing in an organic medium is reminiscent of the swamp-growth of trees which resulted in the brown coal deposits. The family *Cyperaceae* is very strongly represented, and among those present with greatest interest attaching to *Carpha alpina* and *Oreobolus pumilio,* for both these species extend to New Zealand, and the genera, both small, to South America.

The SCLEROPHYLL SCRUB is of particular interest, for it occurs in a high rainfall area where no month receives less than 3.38 inches of rain (Hotham Heights) and the total for the year is over 70 inches; but, as this plant association is on rising rocky ground where the soil is shallow, the full benefit of the rain is not received.

There is an unmistakable similarity between the plants here and those of the Mallee, both anatomically and physiologically, and many of the genera occur in both areas—*Grevillea, Helichrysum, Leucopogon, Olearia, Phebalium, Pimelea* and *Prostanthera*. It is noticeable that such a large shrubby genus as *Acacia* is absent from the High Plains, and it is striking that the family *Leguminosae*—so strongly developed in Victoria—has but few representatives on the High Plains. Among the sclerophyll shrubs, however, are two very showy legumes, *Bossiaea foliosa* and *Hovea longifolia*. Herbaceous species are but few in this habitat, but *Brachycome nivalis* makes a very attractive sight. On the High Plains annuals are very rare, almost absent, and this is of great interest as regards the sclerophyll scrub, considering the very high percentage of annuals associated with the Mallee. Where grassland adjoins the sclerophyll scrub on the High Plains a very attractive annual, *Euphrasia antarctica*, occurs, but this flowers very late in the season.

A feature of these shrubs in exposed rocky positions is the readiness with which they form *espalier* growth on the rocks. All appear to have this habit, including *Kunzea muelleri* which is a mat in grassland. *Baeckea gunniana, Orites lancifolia* and *Prostanthera cuneata* are the most spectacular of this group.

At the sources of the streams where the water is issuing from the springs or arising from the melting of the drift snow (which in 1947 lay well into January) there is an unusual plant group provisionally named SHINGLE ASSOCIATION which, unlike the other associations on the High Plains, does not form a complete cover for the soil. It is an open community with the individuals growing along the joints of the bedrock in gravel or shallow muddy areas. Even well into the flowering period they may be continually bathed with icy water.

This association is bright with colour. Here are found *Caltha introloba* with its large white flowers and the curious infolding of the leaves, *Claytonia australasica* forming at times almost a mat covered with small white flowers, *Drosera arcturi* with its rosette of linear leaves more glistening than any other sundew, *Oreobolus pumilio* small and very rigid, white flowered *Ranunculus millanii* daintiest of all the buttercups, *Stackhousia pulvinaris* forming a small mat bright with cream-coloured flowers, and finally *Viola betonicifolia* brightest of all with arrow-shaped leaves well upstanding and its flowers large and purple.

The heads of the streams lie in more or less semi-circular basins with somewhat steep sides, cirque-like in character, and in which snow lies transversely below the crest. Similar observations were made by Browne, Dulhunty and Maze (1944) on Kosciusko, and it is therefore possible that the heads of these streams have been caused by "snow patch erosion" and that they are really small *cirques*.

Finally, the SKY-LILY ASSOCIATION covers the floors of dry vegetation dams or cut-off meanders. The chief feature of this community, which is only a transitory one and will ultimately be replaced, is that all the species produce either runners or rhizomes and hence the soil is completely covered. The first (and tallest) invader of this new surface is *Carex gaudichaudiana*. *Viola sieberi* and *Hypericum japonicum* are diminutive plants with tiny flowers. *Hydrocotyle hirta* and *Halorrhagis micrantha* are well appressed to the soil and have inconspicuous flowers. *Veronica serpyllifolia*, not common, is readily recognized by its upstanding racemes. Seen at its best, with its large pale steel-blue flowers closely set in the surface of this perfect little sward, *Herpolirion novae-zealandiae* is the gem of the High Plains.

Conclusion

The present vegetational cover of the High Plains is the result of a long series of changes, and as neither climate nor geology has been static, change must be going on at the present time. In the northern part of the State, lakes dry or drying, and rivers, now much contracted, both indicate a decline in climate, and on the High Plains more evidence is available. Former stream heads are now dry, lines of shingle show where streams once ran, and there are dead or disintegrated sphagnum beds. The sequence of changes appears to be that sclerophyll scrub is descending on the grasslands and that sphagnum is being replaced by either scrub or grassland. Erosion does not appear to be of any consequence and Dulhunty (1946) has expressed the opinion that in the Kosciusko region "conditions are the reverse of soil erosion".

BIBLIOGRAPHY

1. Browne, W. R., Dulhunty, J. A., and Maze, W. H., 1944; Geology, Physiography and Glaciology of Kosciusko. *Proc. Linn. Soc. N.S.W.*, Vol. 69
2. Dulhunty, J. A., 1946; On Glacial Lakes in the Kosciusko Region. *Jour. and Proc. Roy. Soc. N.S.W.*, Vol LXXIX.
3. Gibbs, L. S., 1920; Notes on the Phytogeography and Flora of the Mountain Summit Plateaux of Tasmania. *Jour. of Ecol.*, Vol. VIII.
4. Hooker, J. D., 1853; *Flora Novae-Zealandiae.*
5. Singleton, F. A., 1941; The Tertiary Geology of Australia. *Proc. Roy. Soc. Vict.*, Vol. LIII.

Note.– Plant names are as in A. J. Ewart's *Flora of Victoria* (1930).

DO SNAKES FASCINATE BIRDS?

By TARLTON RAYMENT

One hot afternoon the author was walking along a grassy gully in the forest of "Bow-worrung" in North Gippsland, when his attention was drawn to the peculiar actions of a Restless Fly-catcher, *Seisura inquieta,* on a dead shrub of tea-tree some six feet tall. Its wings were working in an excited, aimless manner as the bird more or less fluttered down from branch to branch, ignoring the author's approach. As the bird was about to fall to the ground, he stepped closer, and discovered a Black Snake, *Pseudechis porphyriacus,* at the foot of the shrub. The bird was unable to rise from the ground, although the snake had not touched it. The reptile was killed, and the bird soon recovered its powers of flight.

On another summer day, Clarice Rayment was walking near the homestead, at Leongatha, South Gippsland. She saw a small bird resembling a sparrow—she did not know the species—trembling and fluttering gradually down to the ground, and quite unable to rise. A few feet away, and right under the bird, was a Copperhead Snake, *Denisonia superba,* which slithered away among the tussocks of grass, but was followed and killed.

Some years ago, at Bulgandra, an extensive pastoral property in the Riverina, New South Wales, two people witnessed a demonstration of "mass hypnotism". The pastoralist, the late Mr. C. A. Gibson, and his young son, Nigel, were sitting on the verandah of the homestead during the heat of noonday. About thirty feet distant was the dead stump of a Yellow Box tree, *Eucalyptus meliodora,* some fifteen feet tall. The stump was hidden under a dense growth of ivy, in which some hundreds of English sparrows came in noisy flocks each night to roost within its shelter.

Suddenly, young Gibson called out, "What's happened to the sparrows? They're all tumbling to the ground!" He ran over, and saw that the birds were fluttering about on a gravel drive, where a six-foot Brown Snake, *Demansia textilis,* was stretched out on the ground about ten feet from the base of the stump. The birds were extremely agitated, and made a great commotion, but they appeared to be incapable of escaping, for they kept on fluttering down from the ivy.

The snake, seeing Nigel approach, wriggled off towards the homestead. Having no weapon at hand with which to attack the reptile, Nigel followed it closely, calling for someone to bring a gun. It slithered in behind a tall wire framework supporting a number of sweet peas. It was dislodged after a few minutes tussling, and shot by a station hand. When cut open it was "full of dead sparrows", which had been swallowed whole.

It was evident to these witnesses that the reptile had, in some unaccountable manner, succeeded in attracting to it a large number of birds from the shelter of the ivy. The Gibsons are personal friends of the author, and there is no reason to doubt their veracity, or the details of the encounter.

These three observations demonstrate very conclusively a peculiar influence that dominates the victims' behaviour. The author believes the majority of readers will agree that the snakes, and no other agent, were responsible in the three cases described above.

Nevertheless, the author has excellent evidence that the "charm" does not always work. In the North Gippsland home, the family was at dinner one very hot day. Presently the strange belligerent cooing of a pet pigeon called the author out to investigate the unusual sounds.

To his great astonishment, he saw a Black Snake stretched out on the slope of the grassy mole on which the homestead was built. The cock pigeon, a "Belgian Homer", was calmly walking round the reptile, and ever and anon he courageously drew in closer, and rapidly struck the reptile with the "shoulder" of his wing. He was delivering sharp clips just behind the snake's head, and it made no attempt to strike the bird, but remained quite still. The hen pigeon stood off a little way, obviously an interested, but in nowise frightened, spectator. A garden hoe suddenly ended the duel.

On describing the fight, and praising the courage of the unarmed pigeon, the author was reminded of the nonchalant behaviour of a number of White Leghorn hens which walked inquisitively, and apparently unafraid, round and round a Tiger Snake, *Notechis scutatus*, which once strayed into the barnyard of the farm.

CALL OF THE FROGMOUTH

Despite published information to the contrary, that old fallacy is still rampant, that the Tawny Frogmouth is the "Mopoke", and utters this well-known night call. An excellent photograph of the Boobook Owl—the true "Mopoke"—appears in the *Victorian Naturalist* of December 1941 (58: opp. 118).

Dr. J. A. Leach, in his *Australian Bird Book*, may have unintentionally supported that libel on our Frogmouth. He quoted "Mopoke" as a name for this bird, and the casual reader may not realize that the "(e)" thereafter indicates that this appellation is erroneous. Moreover, its call, written there as "Oom, oom", may be taken as representing the twin notes of the Boobook!

In 1946-7, the late Mrs. Edith Coleman supplied this journal with three most informative and well-illustrated articles on the Frogmouth, one of which dealt particularly with the call of the bird (63: 123). There we read that *its most familiar note is a deep "Oom-oom" uttered many times, a rhythmic pulsing sound*, and that *Mr. A. H. Mattingley estimated the numbers of "ooms" at 14 to 150 without cessation.*

Despite these published notes, it is probable that few have consciously heard the remarkable call of the bird, and fewer still have realized the identity of the caller. The monotonous "oom-oom-oom . . ." is uttered so low in volume as to be inaudible from any appreciable distance. The first time I recognized the Frogmouth's call was at Combienbar in 1938, and it was necessary to listen intently in order to "hold" the sound. I went outside and flushed the bird from a post not 30 feet from the house!

Recently, when camped at Bentleys Plain on the Nunniong Plateau above Ensay, I heard the call again. The faintness of the drumming brought the suggestion from my companion that the bird was some hundreds of yards away, but it was surely very close to the hut. From the distance, too, came the intermittent "Mopoke" of the Boobook. So we heard both birds simultaneously.

Once heard, the call of the Tawny Frogmouth can never be forgotten, and there is no question of confusing it with that of the Boobook Owl.

—N. A. WAKEFIELD.

HELMETED HONEYEATER SURVEY

At a special meeting of the Bird Observers Club at Yellingbo, it was decided to organize a survey throughout the known range of the Helmeted Honeyeater. Any persons interested are welcome to take part; and those able to assist with transport or fieldwork should contact the Leader and Convener, Mr. E. Hanks ('phone FL 1740). Other committee members are Mr. Garnet Johnson, Secretary and Treasurer; Mr. H. Wilson, representing the R.A.O.U. Conservation Committee; Mr. F. Pinchin and Mr. J. Launder. The eastern side of the Dandenong Ranges is being examined first, but co-operation is invited from Gippsland residents too, in connection with the perusal of areas further afield. One object of the Survey is to select a suitable area for reservation, to provide a permanent sanctuary for the rare and beautiful honeyeater.

MEMORIES OF VICTORIAN ORCHIDS

By the Rev. H. M. R. Rupp, Willoughby, N.S.W.

As I was born at Port Fairy in 1872, I may claim that my memories go well back into the Long Ago of a man's life. Some of them have now grown dim, others are still very clear; and among the latter are those of the wildflowers which have had such a special attraction for me all through the years. I left Port Fairy before I was old enough to distinguish an orchid from a cauliflower; but a few years later my father became vicar of Koroit, and it was there that I first made contact with our Australian bush. I can remember very distinctly two orchids among the many wildflowers which in those days graced the bushlands north of Koroit. The south side of the village was, of course, monopolised by the glories of Tower Hill Lake—and in the 'seventies of last century they were glories indeed; glories of primeval bush forest with its fern tree gullies and musk arbours and clematis bowers. Twenty-five years afterwards I visited Koroit and saw what man had done to that lovely forest; and fifty years have not sweetened the bitterness which entered my soul as I contemplated that wicked vandalism. But it is not of that which I set out to write. There were no orchids at the Lake; they belonged to the open forests northward. The two that I remember so clearly were almost certainly *Caladenia patersonii* and *C. dilatata;* we children were taught by my mother to call them Spider Orchids.

My next home was at Coleraine; but just after my father settled down there I was sent off to Geelong Grammar School, whose headmaster, John Bracebridge Wilson, was married to my mother's sister. Bracebridge Wilson had earned his F.L.S. by his work on Victorian algae; but he was a fine all-round botanist, and was quick to encourage any botanical inclinations in his boys. Those of us who were so disposed, after a long Saturday rambling in the bushlands or down the river, would take our specimens to him on Sunday for identification. Our favourite hunting-grounds lay to the south and south-east of Geelong. I don't know to what extent the old Saturday traditions are maintained to-day; but a 44-mile row (to Barwon Heads and back) or a 40-mile tramp to and from Queenscliff-road, Bream Creek or Spring Creek (Torquay of to-day), were very ordinary accomplishments. There were, of course, other localities besides those mentioned, and even the You Yangs were not beyond our reach, though I think we took the train to Lara. By the time I left Geelong in 1891 I knew between 30 and 40 species of orchids. Some of these, however, were not found anywhere near Geelong, but in the Coleraine district during holidays. A good deal of my time was spent at Wando Dale, the hospitable home of Mr. William Moodie, a nephew of J. G. Robertson, of Wando Vale, whose botanical prowess is well known to all students of Bentham and Mueller's *Flora Australiensis*. There was a large family at Wando Dale, and most of them loved wildflowers, so I was always ready for a week or two in their company. Of that family only two are now left; Miss Grace Moodie and her brother Murray, who live at Mosman—not so very far from me—and grow lovely flowers. The other day I came across a little "Catalogue of the Wildflowers of Wando Dale" compiled by me in 1892. It includes the following orchids: *Thelymitra aristata, Diuris longifolia, Acianthus exsertus, A. reniformis* (then called *Cyrtostylis*), *Corysanthes pruinosa* (this was undoubtedly *Corybas dilatatus*), *Caladenia patersonii, C. menziesii, Pterostylis nutans, P. curta, P. pedunculata, P. alata, Dipodium punctatum*.

In 1892 I went up to Trinity College, Melbourne; and for the next few years my botanical activities were divided between the outer suburbs of Melbourne, Coleraine, and Buninyong, whither my father moved about 1895.

What changes have been wrought since then! One of my favourite trips was to Sandringham, where within a stone's throw of the railway station one could pick bunches of lovely "Spider" Caladenias without being a vandal. Beaumaris, Black Rock, Cheltenham and Mordialloc were often visited, and there were orchids galore. It was at Cheltenham, I think, that I first collected *Lyperanthus nigricans* and *Leptoceras fimbriatum*, two of the most fascinating of Port Phillip terrestrials. Blackburn and Ringwood were favourite areas eastward. Once or twice I got as far as Fern Tree Gully, where I was thrilled at the sight of my first epiphyte, the lovely little *Sarcochilus australis*, growing on *Coprosma quadrifida*. Greensborough, further round towards the north, was appropriately noted for its Greenhoods. A surprisingly interesting spot was the Merri Creek about North Coburg, where flourished that quaint little Greenhood *P. cucullata*—in the variety which Mueller named *P. mackibbinii*. Incidentally I may say that it was during my Trinity College years that I made the acquaintance of Baron von Mueller; but that story has been told by Mrs Margaret Willis in her memoir of the Baron, *By Their Fruits*.

One of my best-remembered "finds" during those years was at Portarlington, where I had the good luck to collect two fine specimens of *Thelymitra epipactoides*, even then considered rather rare. Those two specimens are still in my collection at the National Herbarium of N.S.W.

My father's new home at Buninyong proved favourable to my activities among the orchids. Thirty-one species are recorded in the little census of local plants which I compiled in 1896. It was there that I first met the delightful little *Chiloglottis gunnii;* and in a bog near the top of Mt. Buninyong I discovered the largest Greenhood I had ever seen. It was at that time erroneously classed with *P. cucullata;* nearly twenty years were to pass before the late Dr. Rogers gave it its rightful status and named it *P. falcata*.

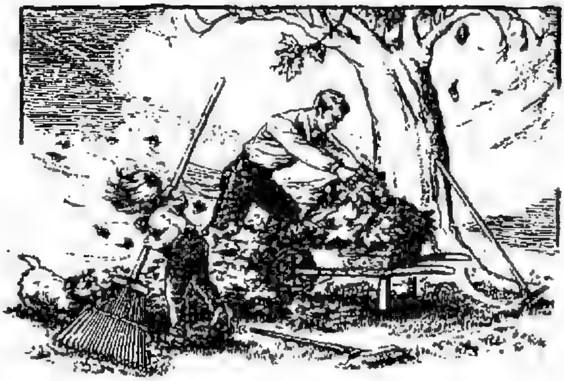
The rest of my orchid records (*i.e.* of species actually collected by me in the field) belong almost entirely to New South Wales and Tasmania. The number of species which I collected in Victoria from about 1885 to 1898 was just under 60. But numbers count for little in memories; what one can never forget is the thrill of a "new" discovery, and the joy of rambling through those bushlands of the Long Ago which were the homes of the flowers that one loved.

JANE LILIAN EDMONDSON

At the time of her death, August 9, 1952, Mrs. C. H. Edmondson had been a member of the Club for just over a half-century, and lately an Honorary Member. When, as Miss Lilian Bainbridge, she joined the Club, she was the teacher of botany and physiology at Tintern Ladies College, now Tintern C. of E. G.G.S., and later became a member of the Council of this school. Soon after her marriage in 1904, her husband also became a member of the Club.

During the earlier years of her membership, Mrs. Edmondson regularly attended meetings, frequently with interesting exhibits, and joined in many excursions. She was most interested in the annual Wildflower Shows staged by the Club, and worked hard for their success.

Mrs. Edmondson was one of the pioneers in the Girl Guide movement in Victoria, and in that sphere of action was able to use with advantage her knowledge of our native plants and trees. An obituary notice in the Guide magazine said, "All who think of Mrs. Edmondson with affectionate remembrance, think of her garden, her delight and her expert interest. We always knew her with a flower." She became successively District Commissioner, Division Commissioner, member of State Executive, and member of Finance Sub-Committee. Mrs. Edmondson's cheerful and optimistic nature and unaffected charm of manner endeared her to all.—A.D.H.



AUTUMN

Showing now in place of Summer's green are the mellow golds and russets of Autumn. These hues—heralding the season of shorter days—are a vivid reminder that day by day, month by month all things living change.

Man, too, progresses through seasons. Your life changes . . . and your family's needs. You can't foresee what your needs will be ten or twenty years from now, but you can plan to meet them with a State Savings Bank account.

The Future is Safe if You Save

THE STATE SAVINGS BANK OF VICTORIA

"Save at this Bank"

FUTURE OF THE "VICTORIAN NATURALIST"

At the Club's Finance Committee Meeting on March 12, 1953, it was estimated that the recent increase in annual subscription rates would soon cause an easing of the financial strain which has so drastically restricted Club publications. The Committee budgeted for an increase in expenditure on Volume 70 of the *Victorian Naturalist*; and this should allow the journal to regain somewhat the standard of previous years.

The advertisements, which have occupied the first several pages of each number for the past four years, are now discontinued. It was financially sound to include them in 16-page issues, but the extra cost of printing 20 and 24 pages exceeds the income from the advertisements. Volume 69 was published at a net cost of much less than was originally intended, because from month to month the extra finance was simply not available. By limiting each number to 16 pages, including an average of 4 of advertisements, and by restricting illustrative material, it was possible to continue publication.

The special Lyrebird issue of September 1952 came at a time of actual financial embarrassment, and the present slight easing of that situation makes it possible to expend the expenses saved by the Ingram Trust's action in financing that issue, on enlarging Numbers 11 and 12 of Volume 69 to pick up the leeway of Club matter displaced by the special issue.

The discontinuing of the advertisements is the most economic method available of increasing the monthly numbers (from about 12, to the full 16 pages of Club material per issue). Illustrations may now be more liberally used, and, if expectations are fulfilled, members may look forward to larger issues of the *Victorian Naturalist* in the near future.

RECOGNITION OF THE GEOLOGY GROUP

At the February meeting of the Club, our Council Member, Mr A. A. Baker, was congratulated on his appointment as Curator to the Geology Department of the University of Melbourne. Mr. Baker said that he was sure that his association with this Club, and particularly with the Geology Discussion Group, was the factor which obtained the position for him.

The appointment is noted, too, in the Geological Society of Australia's *News Bulletin*, Vol. 1, No. 1 (March 1953), in which there is also the following entry:

> FIELD NATURALISTS' CLUB OF VICTORIA—GEOLOGICAL DISCUSSION GROUP.—Many field excursions have been conducted since this group was inaugurated in February 1946. Specimens collected are lodged with the National Museum. An interest in the coastal erosion at Black Rock resulted in a map being made of this area in July 1947. Since then photographs of the cliffs have been taken at regular intervals. Vast changes in the cliff profiles have been recorded. Darebin Creek is at present being mapped from its source to the junction with the River Yarra at Kew.

The Victorian Naturalist

Vol. 69—No. 12 APRIL 9, 1953 No. 832

PROCEEDINGS

Dr. Chattaway presided, and about 120 members and visitors were in attendance, at the General Meeting of the Club on March 10, 1953. It was announced that Mr. A. E. Brooks had been appointed by Council to the position of Honorary Assistant Editor.

Misses Mollie Abbott, Gwenda Erskine and Jill Hassett, and Mr. Douglas Gunn were elected Ordinary Members, Mr. Clive Fisher to Country Membership, and Ronald Tremewan as a Junior Member. The President welcomed these new members to the Club.

The Meeting was then handed over to Mr. A. W. Burston, who conducted the first part of the National Parks Symposium. The details of the lectures presented are given in this issue of the *Vict. Nat.*

The Secretary announced that nominations for the 1953 recipient of the Australian History Medallion must be made at the next meeting. At the same time nominations would be required for Office-bearers and Council. Particular consideration should be given to the appointment of a new Honorary Treasurer, for that position will fall vacant, and there is at present no Assistant. Members were asked to make nominations themselves, rather than leave Council to attend to appointments.

Miss Lynette Young reported that an oil refinery was being established at Kurnell, the site of Captain Cook's historic landing at Botany Bay. The spoiling of this National Monument was proceeding despite protests and the availability of an alternate site at Port Stevens.

NATURE NOTES

Miss Ina Watson described how an inch-long mantis in her garden had eaten a blowfly, taking just 25 minutes from the first "crunch" to the final "wiping of whiskers". She wondered if other members might time a similar feat and determine whether her mantis had established a record!

Dr. Chattaway commented on the cessation of nectar-flow in Sugar Gums at the You Yangs. Lorikeets and bees departed suddenly though actual flowering continued. Dr. Melville suggested that dry weather was responsible and he cited the example of a *Ceanothus* which produced no nectar on first flowering but was induced to do so by copious watering.

Mr. Tarlton Rayment commented that the native bees can survive a nectar-less period, whereas the introduced honey-bee cannot. He remarked further that, in the Box group of eucalypts, the outer row of anthers tends to become sterile and curve over to shelter the inner ones. At one Box forest in north-east New South Wales, the "disappearing disease" caused the loss of 42,000 hives. It was a matter of pollen-starved larvae producing bees too weak to return to their hives against even a light breeze.

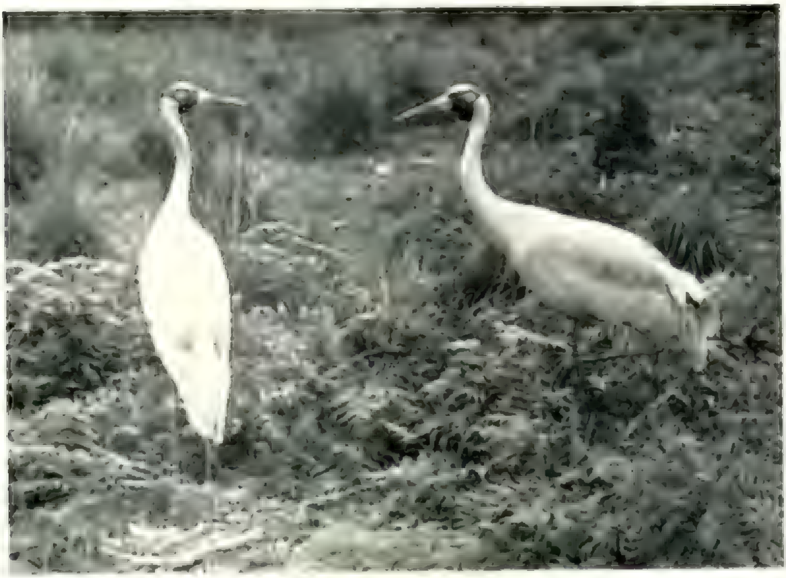
NATIONAL PARKS SYMPOSIUM

In opening the symposium, Mr. A. W. Burston pointed out on a map the positions of the thirteen Victorian National Parks and six other important reserves. The Parks are Wyperfield, Kinglake, Ferntree Gully, Wilsons Promontory, Mount Buffalo, Spermwhale Head, Lind Park, Alfred Park, Wingan Inlet, Mallacoota Inlet, Tarra Valley, Bulga Park and Tower Hill; and the other areas are Buchan Caves, Werribee Gorge, Churchill, Phillip Island, Sir Colin McKenzie Sanctuary and Koala Sanctuaries.

Mr. F. Lewis explained that the prosperity of the country depended on the primary products, necessitating the destruction of habitats of the native fauna. Some birds and animals, such as the Kookaburra, Magpie, Koala and Possum, were adaptable to new conditions, but others were not. In the Western District of Victoria the numbers of kangaroos, wallabies, and emus have been greatly reduced; the Cape Barren and Magpie Geese, the Brolga and Bustard have almost or completely disappeared. In Gippsland, a small wallaby and the Koala have suffered; while the Lowan, which has practically gone from Western Australia and New South Wales, is now rare in South Australia and Victoria. The solution is not in the restriction of the clearing of land, to the detriment of food production, nor in the enforcing of protective laws, but in the proper selection and maintenance of suitable National Parks. This has been done in other countries, notably U.S.A., Canada and East and South Africa. Queensland has a National Parks Association; but, while that State has considered flora, geology and scenery, the fauna has been neglected—with drastic results to koalas, emus and kangaroos. In Victoria the National Parks are valueless land administered by committees of management with only a negligible revenue from grazing leases or firewood royalty, resulting in complete frustration and often cessation of activity. In Victoria we now have a National Parks Association, which recently tendered a very constructive report to the Government. A bill was drafted, but the Association is now concerned with its revision, mainly to have expert park managers appointed, to avoid the possibility of any park area being alienated simply by Order of Council, and to eliminate the leasing for grazing by local committees. Mr. Lewis illustrated the necessity for fauna conservation with a fine coloured film showing intimate shots of some of our disappearing bird species—Emu, Cape Barren Goose, Lowan, etc., and Macquarie Island penguins.

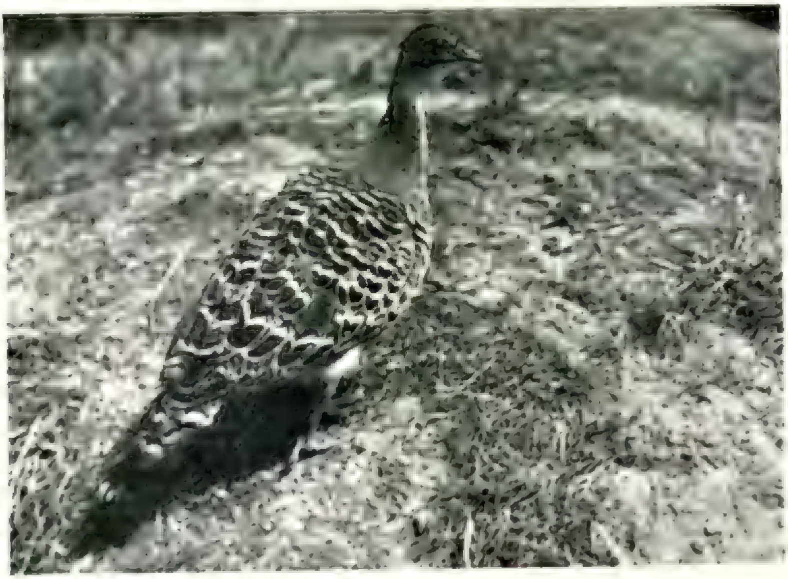
Professor J. S. Turner disposed that not one of our thirteen Victorian parks was well administered, and proceeded to demonstrate proper methods of organization by reference to two in U.S.A. The Yosemite National Park, in the middle of California, covers 1,176 square miles, with snow-capped mountains to the

PLATE XI



Brolgas at the Healesville Sanctuary

Photo: F. Lewis



Lowan at its Nesting Mound, in the Victorian Mallee

Photo: F. Lewis

PLATE XII

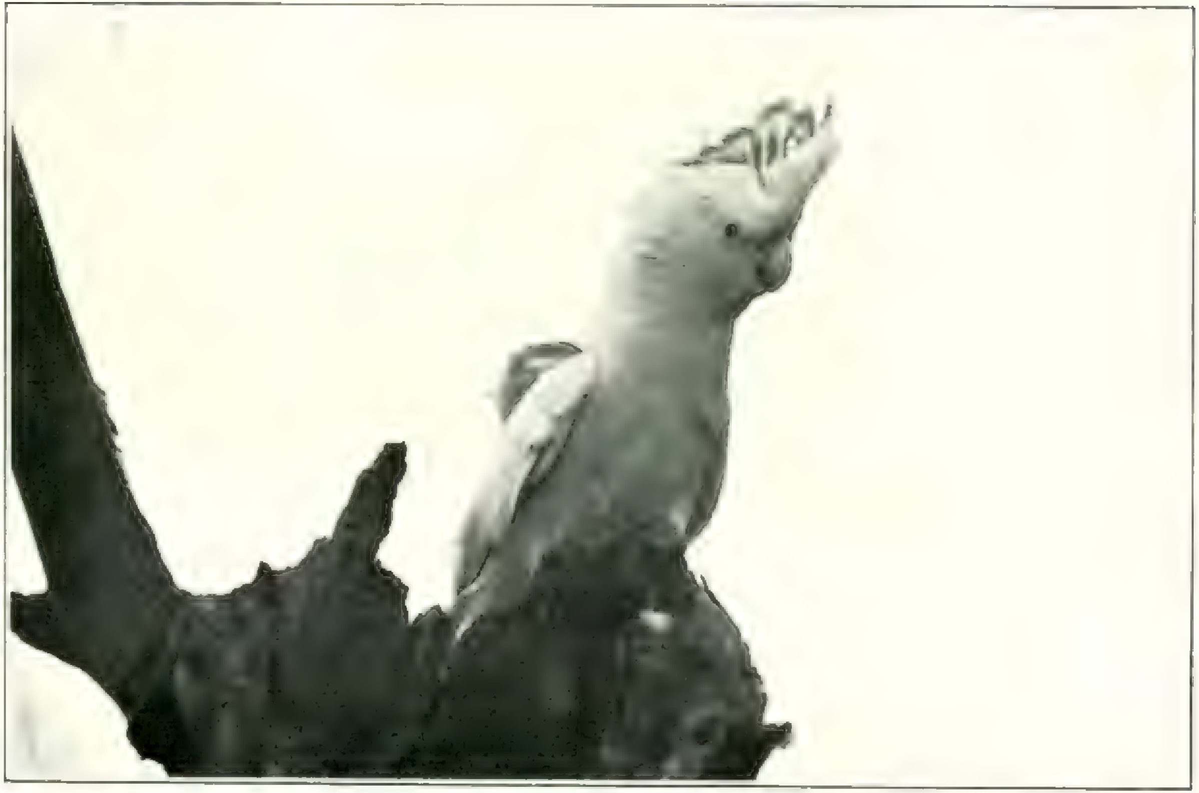


Photo: L. Chandler

By courtesy R.A.O.U.

Major Mitchell Cockatoo

east and numerous streams tumbling over ledges and precipices sometimes over a mile high. The Yosemite Valley itself occupies only about 8 square miles of the vast area, and is the most visited National Park area in U.S.A. It is traversed by a network of roads and contains hotel and cottage accommodation for visitors, thus providing revenue for proper administration. Spectacular colour slides were shown, including some of the Yosemite Falls, which have a total drop of 2,370 feet in their three leaps, and of the gigantic granite crags known as El Capitan and the Half Dome. Professor Turner suggested that the Wilsons Promontory National Park should be organized on the lines of Yosemite. The second example of a United States reserve was the Organpipe National Park in the desert of Arizona, established to protect the giant Organpipe Cactus. This park was likened by the speaker to the Wyperfield Reserve in the Victorian Mallee; and again some beautiful slides were shown. Perhaps the most interesting point in connection with these United States Parks is that they have well organized museums and resident naturalists, providing guidance and instruction for visitors.

Mrs. H. S. Hanks spoke on Wyperfield National Park—Victoria's largest, with an area exceeding that of Buffalo, Wilsons Promontory and Spermwhale Head combined. It is not spectacular, with its dry lakes, sand-dunes, and light forest of Red Gum, Black Box, Murray Pine, Cherry Ballart, Mallee and smaller scrub; but it is of great interest to naturalists nevertheless. Fortunately, the holder of the grazing lease is interested in flora and fauna preservation, and he polices the area against illegal interference. Many colourful slides were shown of the topography and flora-types, as well as many of birds taken by the late A. H. Mattingley during the R.A.O.U. camp-out there. The Spiny-cheeked Honeyeater, Red-throated Whistler, Striated Grass-Wren and Owlet Nightjar were seen, all at their nests. The reason for opposing the "cleaning up" of the park floor was demonstrated with pictures of the ground-nesting Spotted Nightjar, Chestnut-backed Quail-Thrush and Scrub Robin. The Wyperfield Reserve is a stronghold of the Major Mitchell Cockatoo and the Smoker or Regent Parrot.

Mr. J. R. Garnet spoke briefly on Victorian National Park finance, mentioning the apparently liberal proposed grant of £300,000, which, however, would have been tied up with Country Roads Board work on access to the reserves, and not for the essential purpose of providing rangers and curators. Ferntree Gully had used a £5,000 allowance on the establishing of concrete tracks, etc., but a change in government had terminated such expenditure.

VISIT TO MOUNT BULLER

By PAUL FISCH, Doncaster

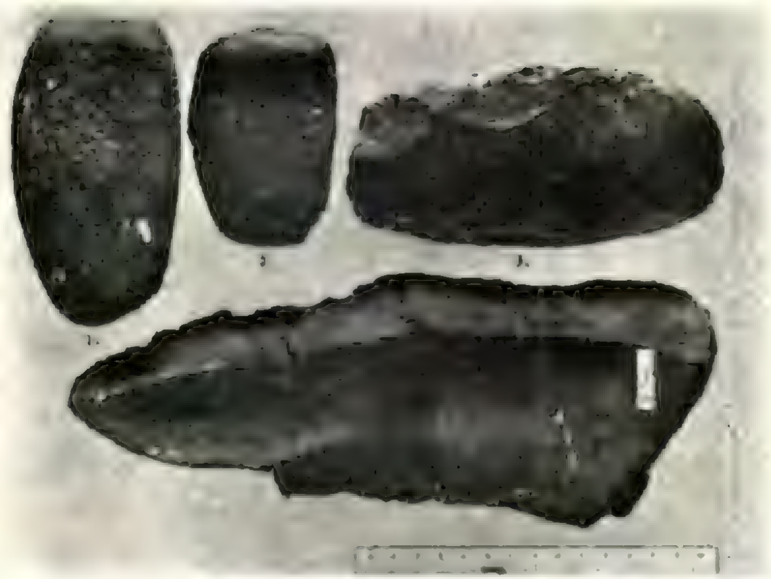
A three-day trip to Mt. Buller in mid-January 1952 proved most interesting and instructive. We left Doncaster at 11 a.m. on January 19, and at 6 p.m. were erecting our tent among the snow-gums of Cow-Camp some 800 feet below the summit. The route we chose was by way of Healesville and Blacks' Spur to Alexandra, thence to Eildon, Mansfield, Merrijig and Merimba. From the Delatite River at Merimba to Cow-Camp the narrow well-graded road climbs 3,000 feet and only about the last mile is rough. Cow-Camp is a saddle on the mountain ridge that branches off the Great Dividing Range from Mt. Howitt in a westerly direction and of which Mt. Buller (5,911 feet) is the most prominent peak. The ridge is flanked on the north side by the Delatite and on the south side by the Howqua, both tributary rivers of the Goulburn.

At Cow-Camp, 5,200 feet above sea level, one finds two rock formations. The northern side of the saddle and the hill towards the east consist of granite, and the southern side of the saddle is composed of Older Basalt. The first rise, called "Baldy" (5,700 feet), west of Cow-Camp, still consists of Older Basalt, with some fine columns showing on its southern scarp. Just before the final steep climb up to the crags of the summit, granite is in evidence again, and two fine springs issue forth, one flowing towards the Delatite and theother towards the Howqua. Mt. Buller peak consists of Palaeozoic sediments which seem to be very resistant to erosion, and some of the rocks show very good examples of folding and faulting.

An ancient river valley occurred in the vicinity of Cow-Camp and "Baldy" in Oligocene times, and was subsequently filled by an Older Basaltic lava flow. During Pliocene and early Pleistocene times the so-called Kosciusko Uplift caused an acceleration of the dissecting power of the streams, thus forming the deep valleys and the Basalt Residual of "Mt. Baldy". While the granitic and basaltic formations give the mountain a rounded character, the sediments of the peak fall off very steeply towards the valleys, some 4,000 feet below.

At the time of our visit the alpine flora was at its best and the summit was a veritable rock-garden. The most prominent and showy species were Bulbine Lily, Mountain Shaggy-pea, Common Billy Buttons, Alpine Westringia, Alpine Eyebright, Snow Aciphyll, *Brachycome rigidula* and *Olearia flavescens*. Also present, but just finished flowering, were the Tufted Buttercup and the Long-leaf Hovea. In the Sphagnum bogs of "Baldy" there were two flowering colonies of Richea, together with Silver Daisy; and the Mountain Plum Pine, growing prostrate over the crags of the summit must be of very great age. At approximately 5,600 feet on "Baldy" occurs the upper tree-line of the snow gums, above which a rich alpine pasture provides summer grazing for cattle. The beautiful snow gums of Cow-Camp seem to have always escaped bush-fires, and now provide excellent shelter for a village of winter-sport cottages. On granitic country to the east, masses of Grass Trigger-plants and Royal Bluebells (*Wahlenbergia gloriosa*) were flowering.

The most unexpected finds at our camp were aboriginal stone artefacts, three axe-heads and a sharpening stone on which axe-heads were ground.



Artefacts from Cow-Camp Photo: H. T. Reeves

Axe-head 1, consisting of Felspar Porphyry (probably of local origin). Edge ground, but subsequently broken. Weight 22 oz., length 5¼ in., width 2⅝ in., and thickness 1⅝ in.

Axe-head 2, consisting of Diorite or dioritic type of rock (resembling rock from the Mt. William aboriginal quarry). Weight 12 oz., length 3¾ in., width 2⅜ in., thickness 1⅛ in.

[Both 1 and 2 have ground cutting edges and are also hammer-dressed]

Axe-head 3, consisting of chiastolite slate. Weight 18 oz., length 6⅜ in., width 3⅛ in., and thickness 1⅛ in. This specimen possesses a well ground edge but is not hammer-dressed, the shape being obtained by flaking.

The sharpening-stone consists of a slab of hard sedimentary rock with a well-worn groove caused by grinding.

The artefacts were found on sandy turf overlaying granite, indicating that the aborigines chose the comparatively warm camp sites of granite in preference to those of basalt.

One can well imagine that the well-grassed slopes of "Baldy" and Mt. Buller attracted a considerable native fauna (Wallabies, Emus, etc.) during the summer months when the lowlands were parched, and that the aborigines followed, hunting this game for food. Possibly too, the natives visited the locality to feed on the Bogong Moths which gather in enormous numbers in rock crevices in altitudes of Mts. Hotham, Buffalo and Bogong. Although at the time of our visit we did not observe these moths, it is most probable that at the right time they would be present on Mt. Buller.

So the locality must have been a very suitable camping ground, providing the tribes with five essentials—food, water in a small soak, shelter, timber, and suitable rocks for the making of stone implements.

AUSTRALIAN NATURAL HISTORY MEDALLION

John Burton Cleland, C.B.E., M.D., Ch.M., F.R.A.C.P., Professor Emeritus of the University of Adelaide, has been awarded the Australian Natural History Medallion for 1952.

His nominations by the Royal Society of South Australia, the Field Naturalists' Section of the Royal Society and the South Australian Ornithological Association, were for his outstanding contributions to botany, ethnology, anthropology and general natural history; and he has devoted considerable energy to the cause of flora and fauna protection and preservation.

Prof. J. B. Cleland
By courtesy Wild Life & Outdoor

Among biologists throughout the Commonwealth he is known—as a one-time microbiologist in the New South Wales Department of Public Health, as the Government Pathologist and Bacteriologist in Western Australia, and, since 1920, as Professor of Pathology at the University of South Australia. His investigations into Q-fever in Queensland and the encephalitis outbreaks in the Murray Valley are among his important contributions to medical knowledge. Though, since 1929, a member of the Board of Anthropological Research (Univ. of Adel.), and currently the Deputy Chairman of the Aborigines Protection Board in South Australia, and joint author of a long paper on the Natives of South Australia published in the *South Australian Centenary History*, among field naturalists he is in the forefront as a botanist and ornithologist.

Responsible for the establishment of the Science Guild Handbook Committee of which he is Chairman, his own contribution to that series—*Toadstools and Mushrooms of South Australia*—was published during the years

1934-5; and he became joint editor, and member of a team of botanists completing the revision of the *Flora of South Australia*—another contribution to the same series.

Readers of periodicals such as the *South Australian Naturalist*, the *Transactions of the Royal Society of South Australia*, the *Emu*, *Australian Avian Record*, *South Australian Ornithologist*, and the *Victorian Naturalist* know his ability to blend enthusiasm and the professional scientific approach. His more recent papers have been concerned largely with plant distribution and ecology

Apart from those civic and scientific offices he has acted as Chairman of the South Australian National Park Commission since 1940 (he was appointed as Commissioner in 1929) and, since 1930, as a member of the Flora and Fauna Protection Board, which has campaigned vigorously to prevent the alienation of part of the Flinders Chase sanctuary.

At various times he has filled the office of President of the Royal Societies of both N.S.W. and S.A., the R.A.O.U. and the Ornithological Association of South Australia and has acted as Chairman of the Field Naturalists' Section of the Royal Society of South Australia, of which he has been a member for more than thirty years.

Although now in his seventy-fifth year his interests and energy appear unabated, the years weigh lightly on his shoulders, and field excursions are still part of his recreation and enjoyment. Finally it should be noted that Professor Cleland has been a member of our F.N.C.V. since 1943.

—J. R. GARNET.

WHAT, WHERE AND WHEN

General Excursions:

Saturday, April 18—Excursion to St. Albans (weather permitting). Subject: Mallee Flora. Leader: Mr. K. Atkins. Take 8.46 a.m. St. Albans train from Flinders Street; bring one meal. (Walk of 5 miles.)

Saturday, May 2—Excursion to Sherbrooke Forest. Subject: Fungi. Leaders: Messrs. J. H. Willis and R. Lee. Take 9.18 a.m. Upper Ferntree Gully train (express Richmond to Box Hill), then Olinda bus to Memorial Gates Bring one meal. Party limited to 40, names to be sent to K. Atkins, Botanic Gardens, South Yarra, S.E.1.

Geology Group Excursions:

Saturday, April 18—Moonee Ponds Creek, Ascot Vale. Subject: "Cephlopods". Leader: Mr. A. A. Baker. Take Essendon tram to Ormond Road, or the West Brunswick bus from Sarah Sands Hotel, Sydney Road, Brunswick. Meet at bridge at 2.30 p.m.

Saturday, May 9—Korkuperrimul Creek, Bacchus Marsh. Subject: "Basalt Rocks". Leader: Mr. A. A. Baker Private transport from Flinders Street at Elizabeth Street loading ramp, 9 o'clock sharp; bring two meals. Walk of 6 miles.

Group Fixtures:

Owing to building operations at the Royal Society Hall, group meetings will be discontinued until further notice.

KENNETH ATKINS, Excursion Secretary.

REQUEST FOR AUSTRALIAN INSECTS

From Rev. G. Variot of French Morocco comes a request for some specimens of the larger insects characteristic of Australia, to aid in the teaching of entomology and for private work. Groups mentioned are *Coleoptera*, especially *Cerambycids* (longicorn beetles) and *Prionids*; *Orthoptera*, especially *Phasmids* (stick-insects) and *Mantids*; and *Dermaptera* (earwigs). Rev Variot is interested particularly in the species which have developed imitative camouflage; and he offers Moroccan insects in exchange. Those who are interested should communicate with Miss C. Crémer, Plant Research Lab., Swan Street, Burnley, E.1.

A TALE OF BLOOD-SUCKING MIDGES

By TARLTON RAYMENT

Honorary Hymenopterist, National Museum, Victoria

I have just examined two amazing arms—human ones resembling the pebble-grain of certain leathers.

But let me tell you about it, for the story is well worth recounting. In these days of hustle (alas, the enemy of that placid contemplation in which all true research is born) even honey-bees are drawn into the infernal racket. They are whirled from place to place so that another harvest shall be gathered in to feed a hungry world.

In the early spring my bee-farmer friend, Lesley Rush of Black Rock, who is perhaps not unknown to you, had transported his hives and some of mine to central Victoria, where there was a promise of nectar for the bees. Lesley set up camp among trees in the "One Eye Forest"—no hoary joke of an eye squinting grotesquely after attack by an irate bee! The amusing burlesque of the white man's name is unfortunately true, and it actually appears thus on official plans of the forest. The aborigines, simple fellows, probably had a much more melodious name, such as "Kinni-wallan" or "Araf-kita": which last may be freely translated as "the kind eye"—but then, our dark-skinned brethren are so primitive, you know.

The winter and spring of 1952, you will remember, was drenched with rain. It teemed down in and out of season, creeks ran as they had never run before, cattle were drowned—some people, too. Now, if the people of "One Eye" protested that they had had more than enough, certain midge-like flies actually rejoiced in the floods and increased beyond the wildest dreams of the entomologists. These tiny creatures, a mere two or three millimetres in length, owe their lives to water, for the larvae flock together in large colonies on rocks in running streams, and would like to have space to tell you of the strange silky bags in which they pupate.

Prudently, of course, Les wears the usual bee-veil of commercial apiarists, but he is able to see about him myriads of midges or sand-flies—you may have your choice of word.

A plain man is Les, one not given to suspect evil in others; so he works on. Whenever both hands are occupied with lifting the heavy hives, gnats, midges, sand-flies (or what you will) descend on his arms, bared well above the elbow. The flies bite, viciously; they draw blood until they are bloated with the living red fluid. Moreover, the little savages force a way through any crevice in the clothing; they crawl up over his socks, and bite him on ankles and legs. Les can clip his trousers close about his legs, but arms must be bare for quick hard work.

Everyone knows that a man cannot carry something requiring the use of both hands, and at the same time defend himself. So Les has to endure the torment, until he has had probably thousands of bites. A few days elapse before he is able to visit me, recount his painful experiences in the "One Eye Forest", and bring a few of the flies.

I said his arms felt like "pebble-grained leather", for each bite was marked by a small red speck, surrounded by a hard tubercle of swollen flesh. One could hardly put a match-head between the bites. The irritation banished all sleep. The constant itchiness forced him to seek a momentary relief by scratching; only then, the irritation increased to an unbearable degree.

Could I suggest any remedial measures? Well, at least a preventive one—wash the hands and arms before beginning the work of the day, and at noon, with a weak solution of carbolic acid crystals (phenol) dissolved in water. For this will repel all insect attackers, including the bees themselves.

Oh, about the flies: I take a specimen or two into the Museum and discuss them with my esteemed collaborator, Alex. N. Burns. We agree that the flies are of a dreaded blood-sucker, *Austrosimulium victoriae,* in the family *SIMULIDAE.*

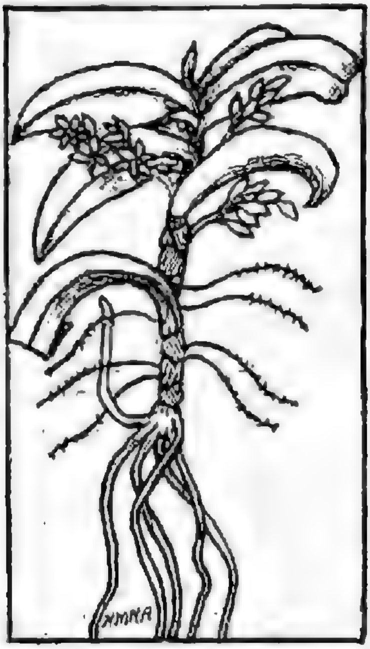
Peoples of the world have learned to dread the great hordes of these tiny lovers of human blood. In New Zealand they are known as "Midge flies"; in England, "Gnat-flies" are abundant, breeding in water; in America, the smoky clouds of "Buffalo-gnats" are alarming. My old and lamented friend, the late Keith McKeown, considered that Australia was fortunate in not having the cloud-like hordes of America; but then, Keith had never been in the "One Eye Forest" of Victoria!

DRYMOANTHUS MINUTUS

(Orchidaceae)

Note by the Rev. H. M. R. Rupp, Willoughby, N.S.W.

In this journal [*59*: *173* (Feb. 1943)], the late W. H. Nicholls described and figured a new genus of orchids with a solitary species, which he named *Drymoanthus minutus.* The specimen upon which he based his observations had been in his possession for more than two years, and it was originally collected by Mr. A. Glindeman at Mt. Fox, near Ingham in north Queensland. This diminutive epiphyte was not recorded again until January of the present year, when Mr. J. H. Wilkie of Babinda, N.Q., collected several plants with budding racemes and sent them to Mr. Norman Loader of Castlecrag, N.S.W. The plants themselves looked so different from the one depicted by Mr. Nicholls, *l.c.,* that at first a new species was suspected. But as the flowers opened, they were seen to agree completely in every detail with those figured by Nicholls. It was then realized that the plant attains greater dimensions than was suspected by the author of the genus, and mature specimens possess stems upwards of 3 cm. in length, on the lower portions of which are a number of old withered racemes with persistent floral bracts. The leaves in all the Babinda specimens are rather rigidly reflexed. This feature is lacking in the solitary plant of Nicholls's plate, but that may be accounted for by its development for more than two years under glasshouse conditions. The perfect agreement of all the floral details with those given by Nicholls ten years ago forbids any doubt as to the identity of the species. Because of his inability to obtain any further material after the type specimen had been consigned to his herbarium, the author once expressed to the present writer some misgivings about his action in erecting a new genus on the evidence of a single plant. He would doubtless have been delighted to hear of the re-discovery of *Drymoanthus* by Mr. Wilkie, and to learn that this little orchid, though still ranking as a diminutive, is not quite so insignificant as he had supposed.



INSET—Mature plant of *Drymoanthus minutus* Nicholls from Babinda, N. Q'land.

MOUNT BULLER'S BOTANICAL CENTURY

By N. A. WAKEFIELD

March 22 this year was the centenary of a very important event in the history of Australian botanical exploration, for it was on that day in 1853 that Baron von Mueller ascended Mt. Buller. He had already explored the Buffalo Ranges earlier in March and ascended Mt. Aberdeen (The Horn); and the significance of his next move is gauged from his report:

> As Mount Aberdeen offered hardly any plants of a true alpine character, I resolved to ascend Mount Buller, whose summits, at an elevation of more than 5,000 feet, are covered throughout the greater part of the year with snow. Travelling quite alone since leaving the Buffalo Ranges, the ascent was not accomplished without considerable danger. But I was delighted to observe here, for the first time, this continent's alpine vegetation, which in some degree presented itself as analagous with the alpine flora of Tasmania . . . ,and which was also by no means destitute of its own peculiar species (*Phebalium podocarpoides*, . . . *Oxylobium alpestre*, *Brachycome nivalis*, *Anisotome glacialis*, etc.) . . . . Mount Buller had never before been scientifically explored.

Thus the Baron made his acquaintance with the flora of the Australian Alps, and Mt. Buller soon became a type locality for several new species of plants. In most cases, other localities were cited also with the descriptions of these, but it is certain that this mountain provided the first known specimens of almost all of them. Besides the four already mentioned in Mueller's own report, there are *Brachycome multicaulis* (a form of *B. rigidula*), *Danthonia robusta* (syn.—*D. pallida*), *Agrostis nivalis* (= *Deyeuxia crassiuscula*). *Deyeuxia frigida*, *Festuca muelleri* and *Westringia senifolia*. Of all these Mt. Buller is a type locality.

The late Dr. C. S. Sutton did a certain amount of collecting at Mt. Buller, and he wrote a short report in the *Vict. Nat.* 23: 175 in February 1907. On January 4, 1945, our energetic botanist, Mr. J. H. Willis, managed to fit in two hours there on his way from Mt. Cobbler to Mansfield. (See *Vict. Nat.* 62: 138, 9—December 1945). In that year Mr. Willis compiled a census of the known flora of the Barry Mountains (from Mt. St. Bernard to Mt. Speculation) together with Mt. Cobbler Plateau and Mt. Buller. The plants noted as occurring in the summit area of Mt. Buller numbered 113 species. With this background in mind, a party of five paid a visit to the mountain during the Labour Day week-end, March 7 to 9, 1953. It included Dr. R. Melville of the Kew Royal Botanic Gardens, Mr. J. H. Willis and the writer. Weather was ideal for the three days, so that a maximum of botanical exploration was possible.

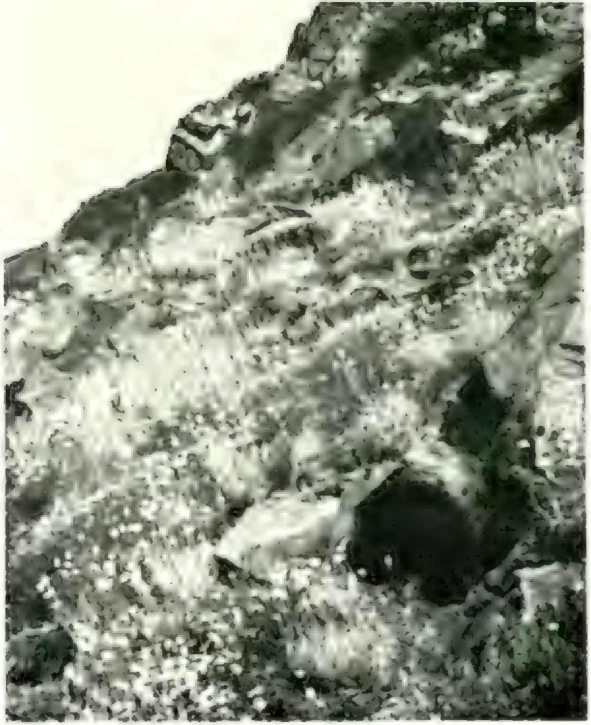
Though it was late in the day (March 7) when the party was established in the Ivor Whittaker Memorial Lodge, as guests of

PLATE XIII

View of the summit of Mt. Buller, looking from the shoulder of "Baldy" across the "Sponge"

Royal Bluebells, with a background of Mother Shield fern, under the basaltic scarp of "Baldy"

Plate XIV



Sunrays and Daisies on the north slope

Gentians on the south slope of Mt. Buller the Ski Club of Victoria, each botanist spent an hour or so on "Baldy", between the ski settlement and the main summit. The "find" of the excursion, *Cystopteris fragilis,* turned up in crevices of the basaltic southern scarp of Baldy. This little fern had been recorded only four times before in Victoria—always in the spray of falling water, but on this occasion it was growing quite abundantly here and there for several hundred yards, in the rather dry cliffs. In the same locality, *Senecio pectinatus* was flowering. Some members of the party examined the boggy creek-head known as "The Springs", just north of the summit, and saw there *Prasophyllum suttonii* and the tiny *Exocarpus nana. Acacia siculiformis* ascends here to about 5,600 feet.

The next day a party including Melville and Willis made the long hike along the main top round the heads of the Delatite River to Mt. Stirling. Two rareties came to light: *Lycopodium selago* on mossy rocks under masses of *Oxylobium,* and *Carex jackiana* in one of the bogs. *Eucalyptus perriniana* was growing in the lowest saddle between the two mountains, in one of the few remaining areas of unburnt Alpine Ash. On the same day, the writer confined his attention to the rocky summit of Mt. Buller itself. On the way, the Springs were investigated and *Scirpus merrillii* and *Hierochloe redolens* noted there. On the 5,900-foot summit, *Agrostis muelleriana* was abundant on rocky ledges, and the diminutive *Scleranthus mniaroides* and *Schizeilema fragoseum* were growing amongst the Snow Grass on the steep southern slope. These three grow here just as they do on the 6,000-foot summit of the Cobboras Mountains.

Before leaving for the lowlands again on March 9, further attention was paid to the interesting Sphagnum bog at the head of the Springs, and there were found *Trochocarpa clarkei, Schoenus calyptratus* and the *Carex jackiana* again. *Agrostis parviflora* was abundant in most wet places.

These 17 plant species were almost all additions to Willis's Barry Mountains-Buller list, but as most of them are insignificant many have probably escaped notice before, and may not be uncommon.

At this season of the year, one misses the main glory of the alpine shrubbery. The acres of *Westringia, Grevillea, Hovea, Oxylobium, Phebalium, Pleurandropsis, Olearia* and *Orites* speak of a magnificent spectacle up there above the tree-line. But even in March, the glory is not all departed. Royal Bluebell displays its deep colour almost everywhere, daisies mass here and there to provide the rocky slopes with vivid splashes of mauve, and in some places the Paper Sunray makes an unbroken blaze of gold for acres. But most exquisite of all is the Mountain Gentian, in full flower here and there down the grassy southern slope, the colour ranging from white to pale blue and some plants over a foot across.

All but two of Mueller's original Mt. Buller species were observed on this occasion, the exceptions being the two large grasses (*Danthonia* and *Festuca*), which have evidently been grazed out of existence. At least a hundred cattle were present above the tree-line, and the state of both the vegetation and ground surface told the usual story of destruction. All told, there was an addition of over 50 plant names to the known alpine flora of Mt. Buller, a fitting commemoration of Baron von Mueller's commencement of the work a hundred years ago.

TWO HYBRIDS OF NATIVE PLANTS

By LEO HODGE, W Tree*

* The writer of these notes is an East Gippsland farmer living about 16 miles north of Buchan, and he has recently been elected as a Country Member of this Club. His efforts in the cultivation of Australian plants have met with remarkable success even though the locality has severe autumn and spring frosts as well as winter snows. In his quarter-acre house block there are trees, shrubs and herbs of about 100 local species as well as 60 other Australian natives, most spectacular of which are the dozen kinds of *Pomaderris* and almost a score of *Grevilleas*. While exploring the Snowy River gorges in quest of suitable subjects for the garden, Mr. Hodge found extensive areas of *Boronia ledifolia*, which was not previously recorded for Victoria, and a *Westringia* new to science.

—Editor.

Here are a few notes about two hybrid plants which I have growing in my garden

phyl/ One is a *Prostanthera* whose parents are *P. lasianthos* and *P. ilicifolia*. I found this plant on a hot, rocky, north-west side of a mountain-top between the Snowy River and Butchers Creek, east of where I live (W Tree). It was growing amongst quite a number of seedlings and mature plants of phyl/ *P. ilicifolia*. The other parent, *P. lasianthos*, grows quite plentifully along a creek about half a mile distant. This hybrid plant has now grown into a dense shrub 7 feet high and 11 feet wide. Leaves are rather smooth, stiff, lanceolate, slightly serrate, 1½ to 1¾ in. in length and about ⅛ in. wide. phyl/ Flowers resemble those of *P. ilicifolia* but are not so dark in the throat and do not open so wide. These are produced in a panicle much the same as that of *P. lasianthos*, but whereas the panicle of the latter is usually devoid of leaves and the bracts fall off as flowers mature, this hybrid usually has small leaves subtending the branches of the panicle as well as the flowers themselves. Thus the flowers are in effect solitary in the leaf axils as in phyl/ *P. ilicifolia*. These leaves or bracts of the inflorescence are persistent until the seeds mature, after which the whole panicle withers. The seeds are very small and may not be fertile.

The other hybrid is a *Brachycome* whose parent plants are *B. rigidula* and a form of *B. aculeata*. The former came from the Buchan River and the latter from the rocks along the Snowy. I grew both for some time in a flowerbed in the home garden. The plant of *B. rigidula* died eventually, but *B. aculeata* formed quite an extensive mass. Many seedlings of the latter have appeared, and amongst them was one with foliage intermediate between that of the two species. The leaves are not divided as finely as in *B. rigidula*, the flowers are larger than those of either parent, and the seeds are apparently not fertile.

THE MYTH OF MACROMITRIUM IN WESTERN AUSTRALIA

(A Moss Note)

By J. H. Willis, National Herbarium, Victoria

A bryologist, visiting West Australian forests, is struck at once by the absence of many family groups that are conspicuous in the moss flora of the eastern States, wherever rainfall and arboreal growth are comparable. For instance, no member of the *Polytrichaceæ, Rhizogoniaceæ, Lembophyllaceæ, Hypopterygiaceæ or Hypnaceæ* (*sensu stricto*) has ever been recorded from the West.

Macromitrium is a very large genus of chiefly tropical mosses that creep on the bark of trees. Two species, *M. incurvifolium* (Hook & Grev.) Schwgr. and *M. involutifolium* (Hook & Grev.) Schwgr., were recorded for King George's Sound, W.A., by F. Schwaegrichen in Part 2 of his second supplement to Hedwig's *Species Muscorum Frondosorum*, p. 144 (1827); but, despite all the extensive collectings of Drummond, Preiss and F. Mueller in the middle of the last century and of several quite recent botanists, no subsequent specimen of any *Macromitrium* has been taken in Western Australia. One naturally wonders whether the original records were reliable.

Watts and Whitelegge (Moss supplement to *Proc. Linn. Soc. N.S.W.*, p. 101, 1905) drop the Australian record of *M. incurvifolium* altogether and, under *M. involutifolium*, remarks that the W.A. record is "open to doubt". Brotherus (*Natur. Pflanzenf., Musci*, 1925 ed., p. 41) restricts the former to Indonesian and Pacific Island distribution, but repeats the King George's Sound locality for the latter species (p. 39). Both mosses were described originally under the genus *Orthotrichum* by Hooker and Greville (*Edinburgh Journ. Science*, 1: 117, T. 4 & 5, 1924). By courtesy of the Regius Keeper, Royal Botanic Garden, Edinburgh, I was recently privileged to examine the two type collections from Greville's herbarium, and we shall now consider each of them briefly:

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1. *M. INCURVIFOLIUM* Schwgr. The single specimen, with one fruit, is labelled: "*Orthot. incurvifolium* H. & G. Ternate, Dickson". There is no mention of King George's Sound. Since Ternate is a small island off the west coast of Halmahera, it is unlikely that such a tropical Indonesian tree moss would occur also on the south coast of Western Australia. Schwaegrichen's record is certainly puzzling. Brotherus gives Java, Amboina, Tahiti and Pitcairn Island as additional localities—all remote from King George's Sound.
2. *M. INVOLUTIFOLIUM* Schwgr. The type sheet of *Orthotrichum involutifolium* H. & G. carries what purport to be two collections: one is over the label "Paramatta, Australia. Hobson, 1823", the other over "King George's Sound, Dickson". Both examples might well have come off the same plant; they are so completely similar in form, coloration and stage of development—even the same little hepatic threads itself among their rhizoids. I doubt whether Hobson and Dickson (British botanists who kept herbaria of cryptogams) ever collected these specimens themselves in the antipodes. What is more likely is that they received them either by correspondence or from collectors returning to Europe.

Now there is a *Mt. King George* (3,400 ft.) at the head of the Grose River near Katoomba, in the Blue Mountains (N.S.W.). Would it not be possible for the field collector to write "King George's Mount" against his specimen, and a recipient in Britain to misconstrue this as the more familiar place name, "King George's Sound"? Such mistakes have occurred all too frequently, and the possibility here is heightened by the fact that F. Sieber, who collected the type of *M. hemitrichodes* Schwgr. (*Suppl.* 2, pt. 2, p. 136, T. 193, 1827) *did* visit the Blue Mountains in 1823—the very year attributed to Hobson's *M. involutifolium* material. Moreover, although I have not been able to study the type of Schwaegrichen's *M. hemitrichodes*, his description and coloured figures accord very well with the type specimens of *M. involutifolium*. I suggest, therefore, that the two species are identical and were actually based upon the same Sieber collection—either from Parramatta or the Blue Mountains.

Obviously Schwaegrichen had not seen the Hooker and Greville types, for he places these *Macromitrium* species in a section "*Peristomio ignoto*" (p. 144), notwithstanding the fact that type *M. involutifolium* [also a series of neat pencil drawings accompanying it] shows a distinct *single peristome of short free teeth*. Had he examined this type, he would hardly have established his *M. hemitrichodes* on page 136 of the same volume. Brotherus (*Natur. Pflanzenf.*, 1925 ed.) assigns *involutifolium* to the section *Leiostoma*, having double peristome with cohering outer teeth, so it is doubtful whether he, too, had ever consulted the type.

In conclusion, all available evidence is against the probability of either *Macromitrium incurvifolium* or *M. involutifolium* having been collected at King George's Sound. I therefore advocate the deletion of these species from the West Australian list, which will still lack any representative of orthotrichoid or macromitrioid *Musci*.

ORCHIDS IN WILDFLOWER SANCTUARIES IN VICTORIA

Lists of plants in sanctuaries have often been made in autumn and winter, and vary from the probably complete list for Tallarook to a short list for the sanctuary to be made by the Forests Commission near Bendigo, which gives three orchids.

Places where sanctuaries have been made or are being made are here arranged in an order which probably indicates the ratio of the number of orchids on the census to the number in the sanctuary—Tallarook, Longwood, Nunawading, Warrandyte, Frankston, Croydon, Marlo, Anglesea, Bendigo, Sydenham.

In 7 of the areas *Glossodia major*; in 6 *Eriochilus*; in 5 *Calochilus robertsonii* and *Pterostylis nutans*; in 4 *Thelymitra pauciflora*, *Microtis unifolia*, *Diuris maculata*; in 3 *Thelymitra aristata*, *T. antennifera*, *Acianthus reniformis*, *Diuris longifolia*; in 2 *Dipodium* (Warrandyte and Croydon), *Prasophyllum despectans* (Anglesea and Nunawading), *Pr. nigricans* (Tallarook and Longwood), *Thelymitra rubra* (Longwood and Nunawading), *Acianthus exsertus* (Anglesea and Marlo), *Lyperanthus nigricans* (Anglesea and Frankston, *Pterostylis pedunculata* (Warrandyte and Frankston), *Caladenia coerulea* (Longwood and Warrandyte), *C. dilatata* (Tallarook and Warrandyte), *Diuris pedunculta* (Longwood and Croydon); in 1 (Tallarook) *Thelymitra ixioides*, *Caladenia angustata*, *Diuris sulphurea* (Longwood) *D. palachila*, *Caladenia cucullata* (Frankston) *Prasophyllum elatum*; (Warrandyte) *Caladenia fitz-gerldii*, *Pterostylis curta*, *Pt. barbata*, *Pt. pusilla*; (Anglesea) *Leptoceras*, *Corybas* (?); (Bendigo) *Caladenia carnea*; (Marlo) *Thelymitra grandiflora*, *Corybas aconitiflorus*, *Chiloglottis reflexa*, *Glossodia minor*, *Orthoceras*, *Cryptostylis subulata*, *C. erectra*, *Peterostylis longifolia*, *Pt. pedoglossa*; (Sydenham) *Diuris alba*.

Mr. Hunter expects to add to the Marlo census. Elsewhere, except Anglesea and Bendigo, only likely additions would be *Pterostylis* and *Thelymitra*.

The Native Plants Preservation Society of Victoria will welcome suggestions which may lead to the filling in of certain obvious and serious omissions.

W. WADDELL, Secretary.

The Native Plants Preservation Society of Victoria.